

MAINTENANCE ASSESSMENT GUIDE



FOR COAST GUARD HOUSING

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Subj: Maintenance Assessment Guide For Coast Guard Housing

1. Purpose. This publication provides basic housing maintenance information. It is intended to be used by housing maintenance personnel and housing managers to: (1) Identify minor maintenance problems before they become major repair costs; (2) Learn when, where and how to look for emerging problems; (3) Locally prepare SSMRs that reflect the true needs of housing facilities; (4) Develop proactive maintenance plans; (5) Increase resident quality of life. The accompanying **STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT** will provide housing maintenance personnel additional assistance in completing hands-on maintenance tasks.
2. Background.
 - a. The Coast Guard owns or manages 4900 family housing units and 5000 unaccompanied personnel rooms.
 - b. Effective, timely, quality maintenance increases resident satisfaction.
 - c. Identified and documented maintenance requirements allow for timely repairs. Extended useful life and reduced vacancy days will decrease life-cycle costs of Coast Guard housing.
3. Changes. Recommendations for improvements or changes to this publication shall be submitted to Commandant (G-PWL-1).

W. C. DONNELL
Chief, Office of Personnel

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MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

SECTION 1: INTRODUCTION

PURPOSE:

The MAINTENANCE ASSESSMENT GUIDE-FOR COAST GUARD HOUSING was developed for use by housing maintenance personnel and housing managers as a tool to objectively assess the maintenance efforts required in the housing units under their care. Using this guide, managers and maintenance personnel will be able to:

- o Identify emerging problems to prevent major repair cost
- o Learn when, where and how to look for emerging problems
- o Extend the useful life of their facilities by preventing prolonged unrecognized deterioration
- o Increase resident satisfaction and pride by recognizing and correcting emerging defects before the residents see the problems
- o Locally prepare **SSMR's** that will accurately reflect the true needs of Coast Guard housing facilities
- o Develop proactive maintenance planning.

Maintenance personnel will also find the repair book included with this guide a useful resource in the "hands on" repair of problems identified by the assessments.

DISCUSSION:

The user must be aware that the MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING is not a "how to" repair guide but is instead a "what to" repair guide. For the "how to" we have purchased and included a copy of THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT. Replacements can be ordered directly from the publisher on GSA Contract #GS-02F-8023A through January 31, 1997. At the end of each section in the guide a cross reference will be provided directing the user to the appropriate page number in the "how to" book for more detailed repair task information.

The assessment guide is written and intended to be used in assessing the condition of each and every unit, one at a time,

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within a housing site. The only possible way to ensure each family has the highest quality housing possible is to assess each housing unit. Randomly selecting a limited number of units within a housing site does not ensure that **all** defects are identified; this commonly used practice only guarantees that **most** are identified. For the family whose personal belongings are destroyed when the corroded pipe in the attic bursts and floods the house, identifying **most** defects would probably not be good enough. For the family whose child develops lead poisoning from the presence of lead-based-paint, **most** would probably not be good enough. Because of the sporadic maintenance methods used in Coast Guard housing in years past, the only way to ensure an accurate assessment of maintenance needs is to assess every unit individually. In doing so, **all** defects are identified, then corrected or placed on the backlog for correction.

Given the current condition of Coast Guard housing, the number of SHORE STATION MAINTENANCE RECORD (SSMR) cards submitted for repair work on housing units should drastically increase as the assessments are accomplished. A sample completed SSMR and blank SSMR are included as Appendices 1&2. All maintenance personnel, regardless of rank, and all housing managers should familiarize themselves with this form and with the local submission process. Contact your CEU for assistance. A complete listing of all Civil Engineering Units is included as appendix 3. The SSMR is the primary means of communicating your shore facility (housing) maintenance needs. Good maintenance planning is crucial in the submission of the SSMR because completion of the project submitted is planned to be five years from submission. Because of the planning required for AFC-43 projects, it is imperative the condition assessments be initiated and completed promptly. Required maintenance needs discovered in the assessments must either be locally corrected or placed on a SSMR for submission without delay.

The Shore Station Maintenance Record (SSMR) is only one step in the total maintenance effort but its use is essential in a successful program. The SSMR is used to enter a request in the Shore Station Maintenance Program. Other ways to enter a request are via plain text message and the CASREP. These methods should be used at a minimum; only when immediate action is required to protect life, safety, the Coast Guard's investment or the operational capability of a unit is impaired. Given this criteria the SSMR would be the normal expected method of communication for housing facility needs. The submitting unit should fill out the top third of the SSMR (CG-4094). The description of work must fully describe the problem or goal of the project. Always enclose pictures or slides with the SSMR that illustrate the problem. The SSMR is then forwarded up the chain for group/section endorsement. If the project is

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determined to be within the technical and financial capability of the group the SSMR would be so endorsed and returned to the submitting unit without going to the CEU. The group will schedule and complete the project. When the project is beyond group/section capability the SSMR is endorsed by the group/section and forwarded to the CEU. When received, the CEU will assign a project number and enter it the Shore Station Maintenance Program on the AFC-43 backlog. The CEU will return the green copy or part five of the SSMR to the originating unit within ninety days with a project scope and preliminary estimate indicated. The CEU may issue a Work Order number with funds accounting data included. This will allow the group/section to contract locally for the completion of the project. All other AFC-43 backlog items will be placed before the Shore Facility Management Planned Obligation Priority (POP) Board for project scheduling. Be aware this can be a five year process. The POP boards meet quarterly and each program manager presents and seeks priority to be given to their projects on the backlog. Housing managers must ensure they and their housing projects are being fairly represented at the POP board meetings. The following provides some clarification in utilizing the SSMR and the Shore Station Maintenance Program.

Submit an SSMR when:

- Any alteration to the structural condition or floor plan is planned, regardless of cost. Example- Install partition wall and plumbing to make a laundry room.
- A maintenance, repair or replacement project is planned that will exceed \$3000.00 and is non recurring. Example- Replace roof on unit 109B, shingles are 20 years old. Small projects cannot be combined to exceed \$3000.00. Example- Replacing 10 window air conditioners in 5 separate units should not be submitted on an SSMR. Instead, budget within local AFC-30 maintenance funds for replacement.
- Engineering assistance or help from the CEU is needed to find solutions to existing problems. Example- Determine if an interior wall is load-bearing or non-load-bearing.

Many interviews with Coast Guard Petty Officers assigned to housing maintenance billets were conducted during the research phase of preparing this guide. It was developed to address the overwhelmingly unanimous response received from those interviews. All respondents echoed the need for a tool giving guidance focused more on "what to do" and "what to look for" rather than

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on "how to do"; that it be written in simple layman terms, something understandable without an engineering degree. We have endeavored to meet these requests in the development of this guide. As a petty officer, regardless of rate or rank, assigned to housing maintenance, this is your guide, a tool. We hope it will allow you to do your job better and to provide your customer a higher quality housing unit to live in. In doing so you help us accomplish our goal of ensuring the quality of Coast Guard owned housing is second to none and our people have the best and safest housing possible in which to raise their families.

This guide was developed by the Headquarters Housing Programs Branch with assistance from the Headquarters Civil Engineering Division. Your comments and suggestions regarding this guide are encouraged and welcomed. They can be directed to:

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Washington, D.C. 20593-0001

Attn: CWO Jeff L. Wolfe or
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-1800
FAX (202)267-4862

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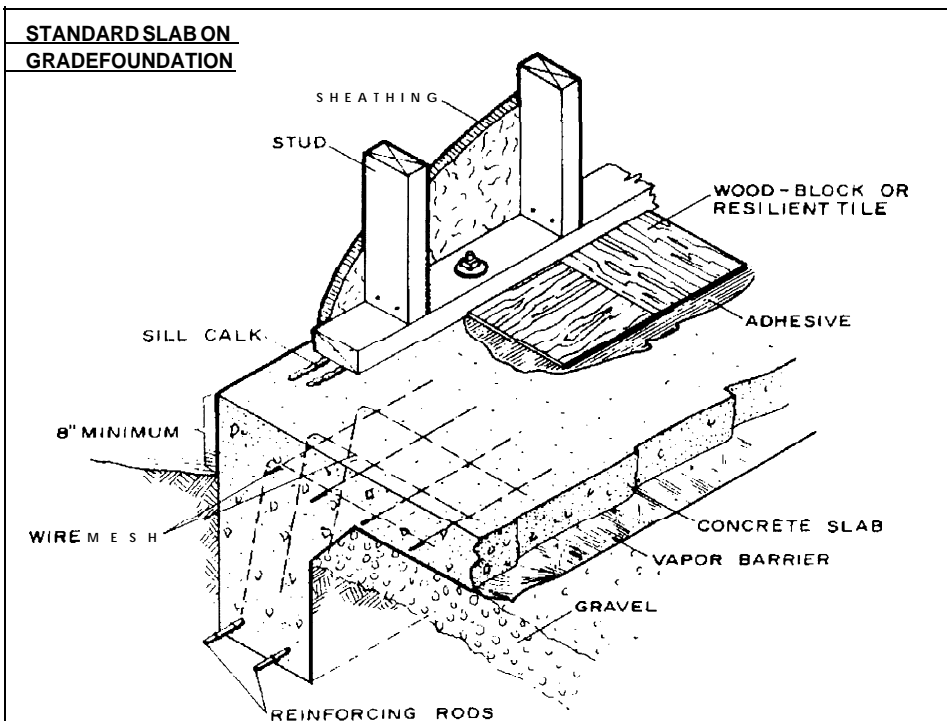
SECTION 2: FOUNDATION

A. PURPOSE :

The foundation supports the weight of the building or house. Shifting, settling or cracking of the foundation will cause structural and cosmetic problems to appear in the unit. Four foundation types will be discussed in this section.

B. TYPES :

- Slab on grade
- Slab on grade with piers
- Crawl space (walls will normally be concrete or cement block)
- Basement



COMMON DEFECTS :

Foundation defects will often be seen inside the unit; doors and windows will not operate properly, cracks may be evident at the intersection of walls and ceilings. Differential settling and cracking will cause cracks to appear in exterior

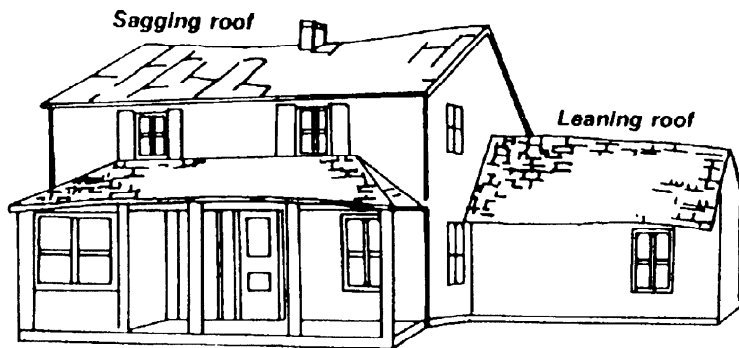
masonry and stucco wall coverings. The common defects most often associated with basement foundations are cracking, settling, and migration of water through the foundation wall, collecting in the basement. Caving or bulging of basement foundation walls may also indicate foundation failure. Crawl space (pier and beam) foundations are subject to differential settling, excess moisture, condensation, and standing water.

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D. INSPECTION PROCEDURE :

- a. Identify foundation type.
- b. Inspect exterior perimeter of the foundation for cracks in the concrete or mortar. Often differential settling and cracking will be evident during this portion of the inspection.
- c. In the case of crawl space foundations, ensure a vapor barrier completely covers the ground area without tears or holes. Look for standing water, excess moisture, or condensation on structural members in the crawl space. Moisture and condensation is a result of inadequate ventilation in the crawl space. Standing water can result from poor site grading and drainage or could be the result of a plumbing problem. Look for insect or termite infestation in the wooden structural members located in the crawl space. Remove any "scrap" wood lying in the crawl space on the ground.
- d. Basement foundation walls should be checked for failure.

THE ROOF LINES OFTEN INDICATE SERIOUS PROBLEMS IN THE FOUNDATION.

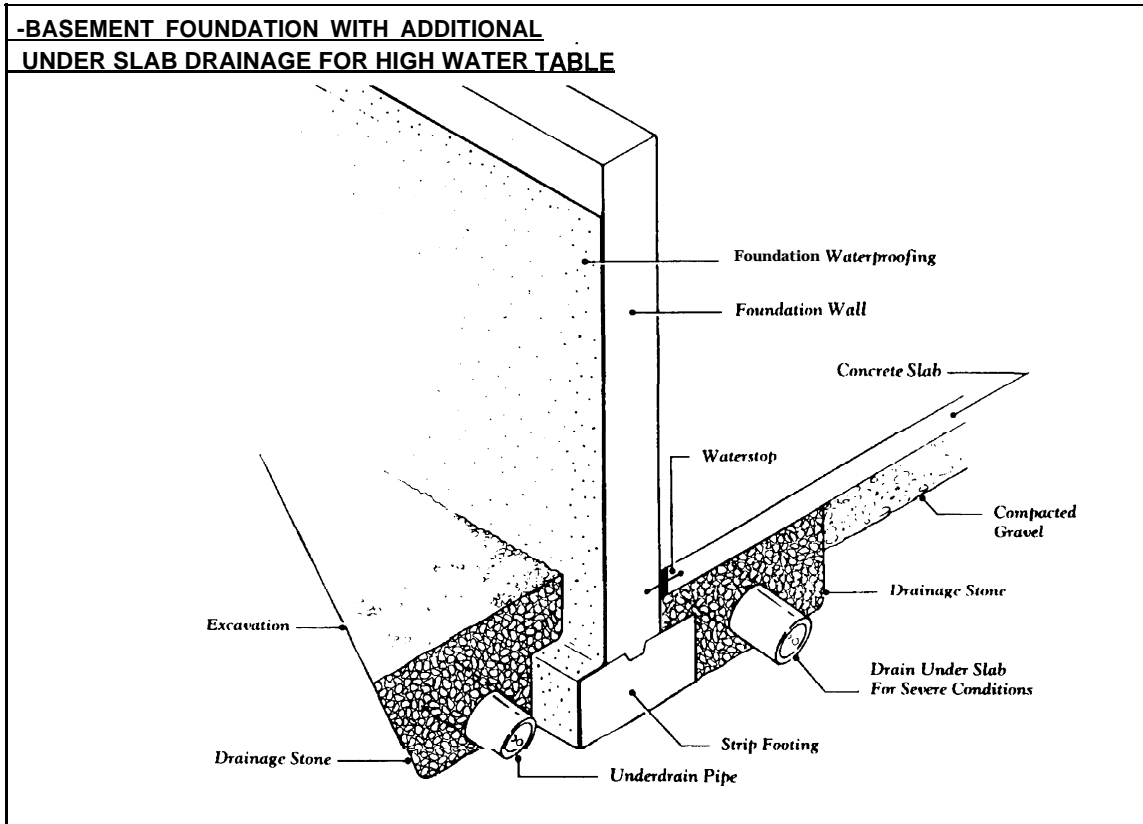


By applying a straight edge or a taut string against the foundation wall, an inward bulge will be readily noticeable. Look for signs of water entering the basement through the walls. Check for signs of termite or insect infestation in wood structural members.

- e. Slab on grade foundations should be checked for settling either visually (noting any cracks), or by placing a level on the interior floor. Look for areas where water might be washing soil from under or away from the slab. This is usually caused by inadequate drainage planning or splash blocks missing from under guttering and downspouts.
- f. Inspect interior doors, windows, and walls for signs of foundation failure. Doors and windows out of plumb will either jam or have gaps between the unit and its frame, often caused by the foundation being out of level. Many

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times an unlevel foundation will cause visible gaps or cracks to form at the intersection of interior walls and ceilings.

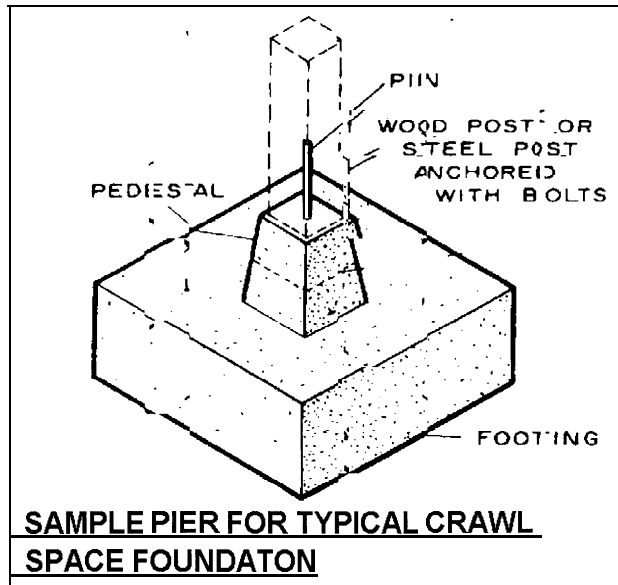


E. RESULTS AND CORRECTIVE ACTION :

- a. It is very important to properly and promptly document all findings in which foundation failure is suspected. Failure to take prompt action will only allow the situation to get worse and possibly deteriorate to a point where the unit might have to be condemned. Foundation problems do not go away, they only get worse. Continually repairing the results caused by foundation failure will never fix the real problem but will continually be a drain on maintenance funds.
- b. Proper site drainage and grading may be needed to prevent erosion or standing water to accumulate under crawl space foundations.

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- c. Excavation and sealing of basement foundation walls may be needed to prevent water from seeping through and into the basement.



⇒ **NOTE**

MOST FOUNDATION REPAIRS ARE BEYOND THE SCOPE OF NORMAL AFC-30 MAINTENANCE. SEEK ASSISTANCE FROM YOUR CIVIL ENGINEERING UNIT (CEU).

FOR MORE INFORMATION SEE PAGES 108-113, 312-315 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 3: EXTERIOR WALL STRUCTURE

A. PURPOSE :

Exterior wall structures transmit the weight of the roof to the foundation. Interior and exterior wall finishes are applied to the wall structure. The exterior wall structure will most often contain insulating material. The most common exterior wall structure is wood stud framing. Depending on the geographic location and climate, wood stud framing should either be 2x4 or 2x6 placed 16" on center. The insulating material is placed between the stud framing. Some exterior walls will be concrete block/concrete masonry unit and mortar, while in rare cases you may find poured in-place concrete walls.

B. TYPES :

- a. Poured In-place Concrete
- b. Cement Block or concrete masonry unit (cmu)
- c. Wood Frame

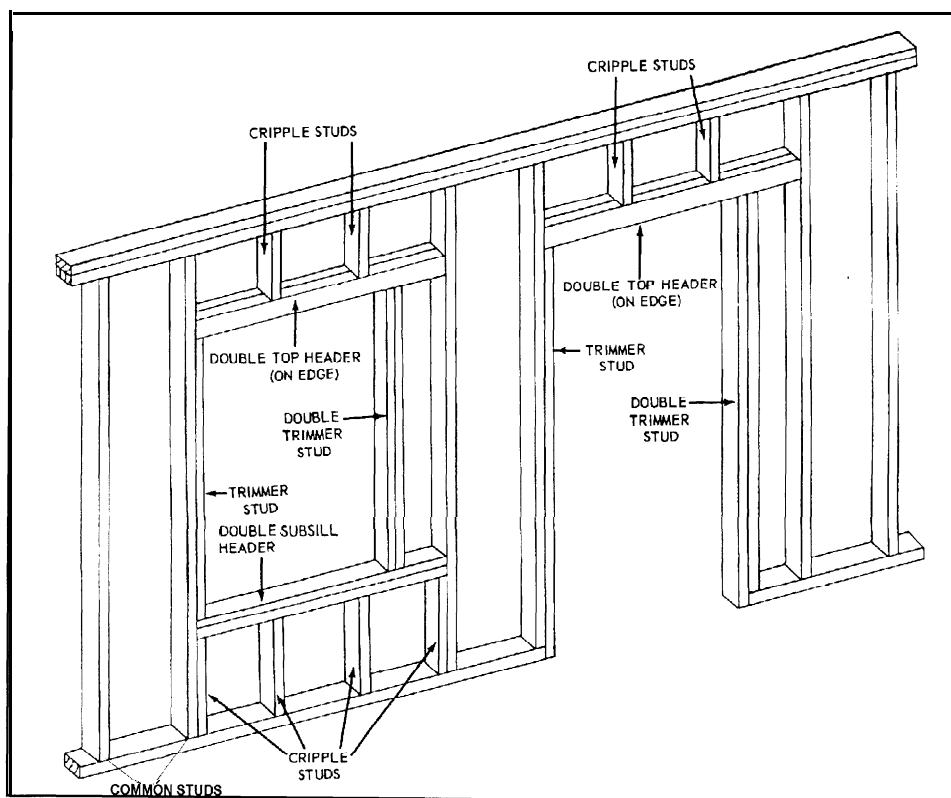


Figure 1: TYPICAL STUD WALL FRAMING

Co COMMON DEFECTS :

In the case of wood framing, the likely defects will either be rot from excess moisture or insect damage caused by termites, carpenter bees or carpenter ants. Each of these can limit the structural capacity of the wall. Concrete and concrete block walls are subject to spalling.

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Spalling is evident by the flaking, chipping or cracking of the concrete or block. Spalling diminishes the strength of the wall and can allow wind and moisture to migrate into the structure. Cracks in concrete walls or missing mortar in block walls might be the result of foundation problems and not a structural wall problem

D. INSPECTION PROCEDURE

- a. Identify wall type.
- b. Check concrete and concrete block walls for spalling, cracking, or missing mortar. It is important to determine if these problems are caused by an inherent condition in the wall, or result from a larger problem with the foundation.
- c. Give special attention to any areas in a masonry wall where moisture or air could infiltrate through the wall.
- d. Inspecting wood frame structural walls can be difficult or impossible when the structural framing is covered by interior and exterior wall finishes. Every effort should be made to inspect wood framing anytime the siding or interior finish is removed or opened for other repairs or replacement.
- e. When visual inspection of wood framing is not feasible, there are several signs of possible damage that can be observed. The evidence of moisture on interior finishes (i.e. wet or damp drywall and plaster, mold or mildew stains on the interior finish, or signs of water damage on floor coverings at the point they meet the interior wall) are often tell-tale indications of rotted wall framing caused by long term exposure to excess moisture. Rotted, loose, buckling or mildewed exterior siding is often an indication of damaged structural framing.
- f. Without looking directly

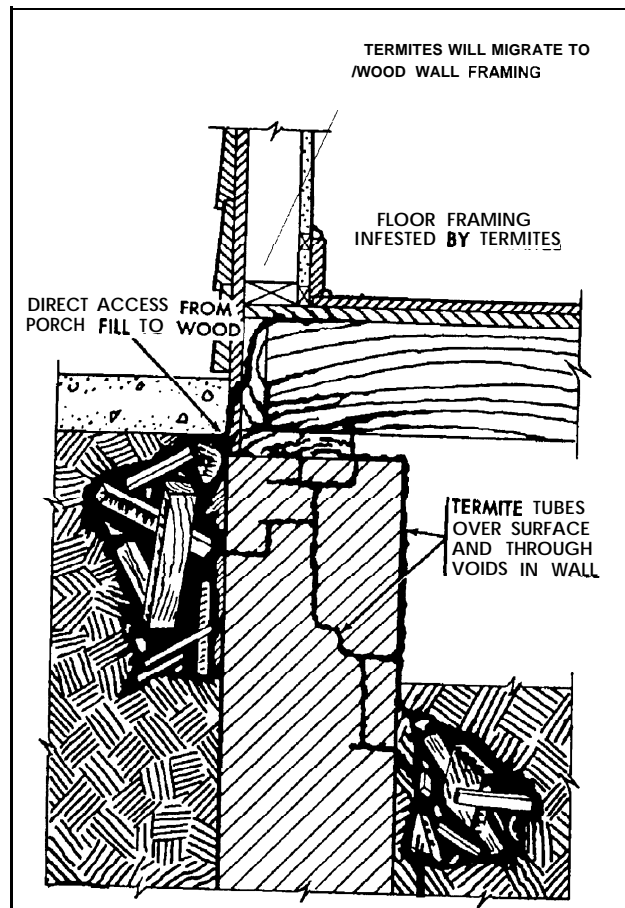
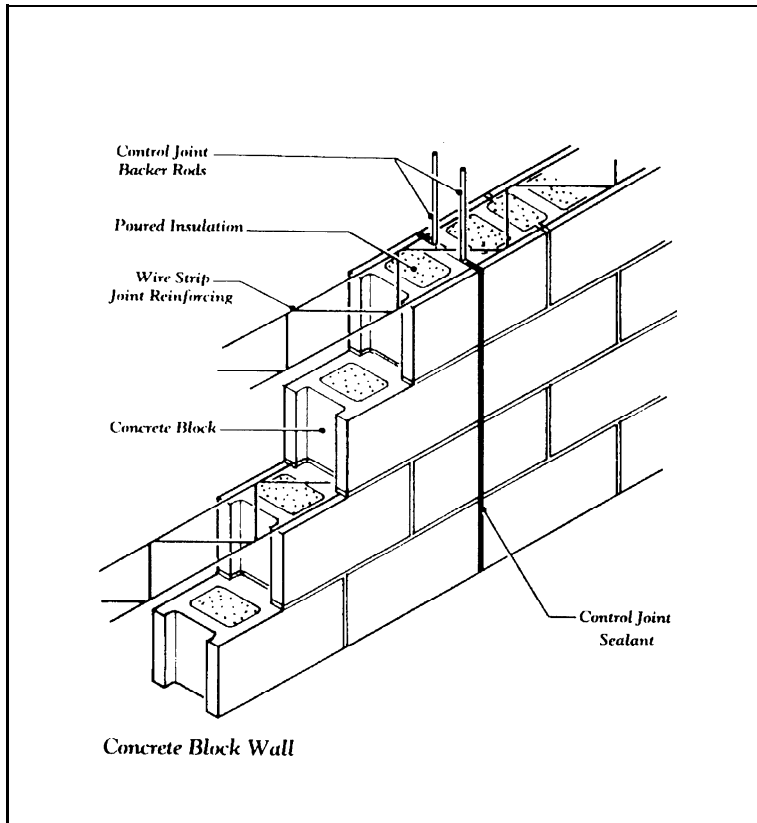


Figure 2: ILLUSTRATION OF TERMITE MIGRATION

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at the wood framing, it is often possible to detect the presence or past presence of termites or other wood-destroying insects by a close inspection of the foundation



or foundation wall. Termites will construct "mud tubes" extending from the ground to the wood siding or framing. These tubes are used as termite pathways. Carpenter ants can also be seen travelling along the foundation. Looking closely at the base of the interior wall, typically next to the baseboard, small particles of wood, resembling sawdust, can sometimes be detected. These particles can be residual droppings from

wood-boring termites, ants, bees or beetles.

E. RESULTS AND CORRECTIVE ACTION

- a. Discoveries of termite or wood-boring insect infestation must be verified and treated by a professional pest control company immediately! Termites can do extensive damage to a housing unit in a relatively short amount of time. When an infestation is verified, a structural inspection should be made to determine the extent of structural damage and the amount of wall framing to be replaced.
- b. When rot is discovered, it is important to assess the structural damage caused by the weakening of the framing members. Many times structural damage can be limited if the intrusion of and exposure to moisture is alleviated promptly.
- c. Cracks and areas of spalling in concrete block and concrete

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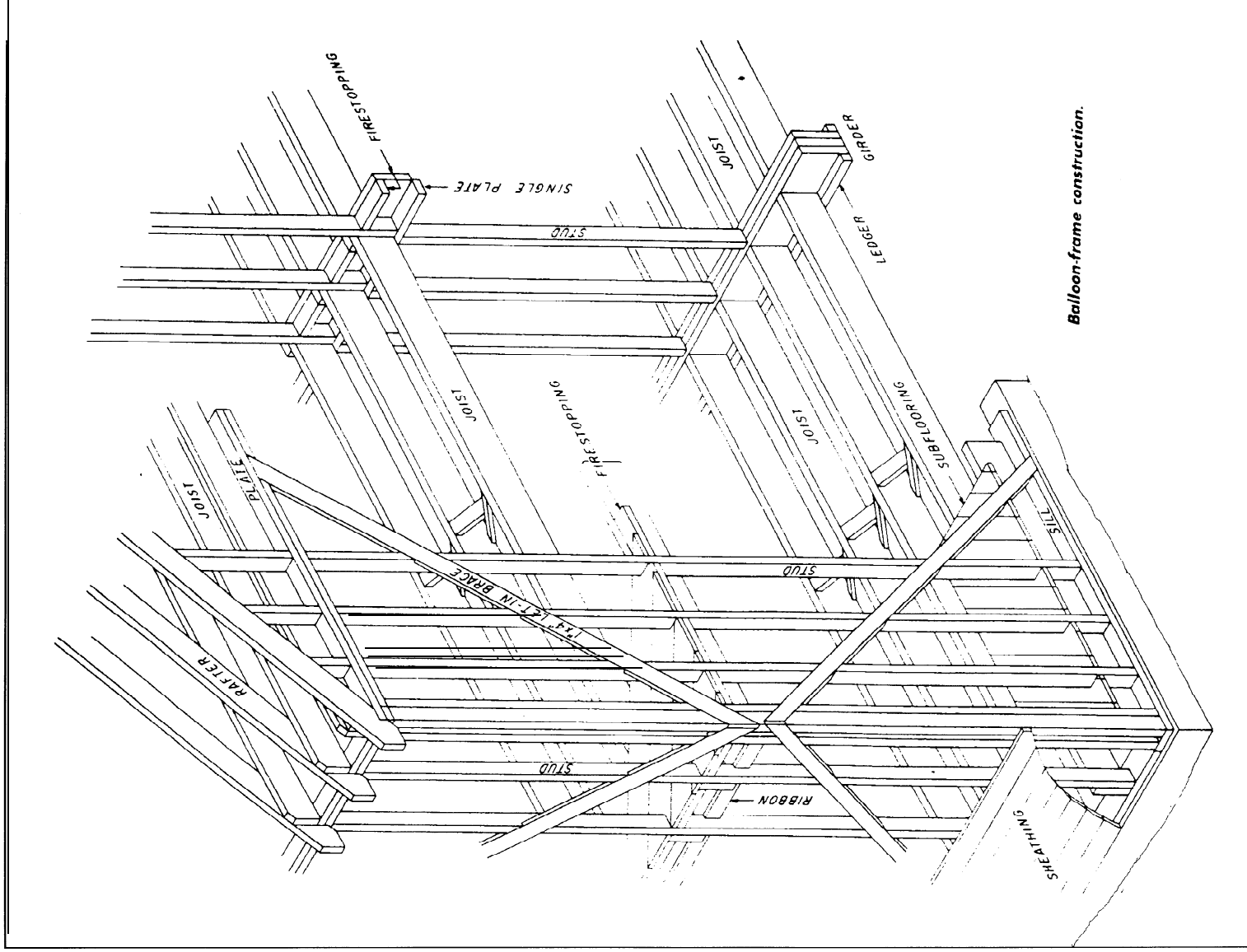
walls should be patched promptly to limit air and water infiltration. Patching is not repairing. A structural inspection should be performed to determine the cause of the cracks and spalling and their effect on structural integrity.

- d. Document all damage for inclusion in the maintenance backlog. If required, submit an emergency SSMR to effect repairs when the structure is in jeopardy of sustaining further damage.

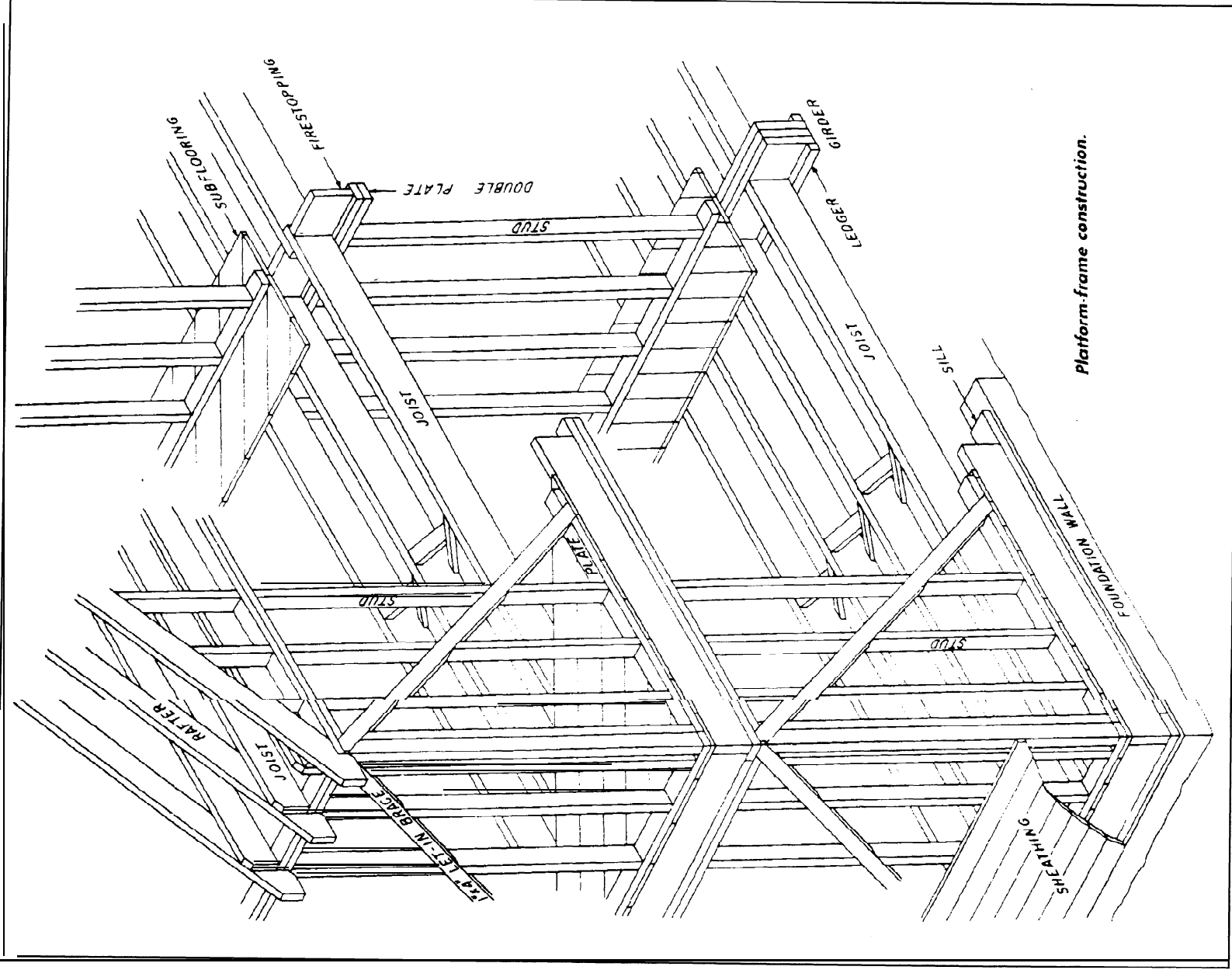
⇒ NOTE

MOST STRUCTURAL INSPECTIONS WILL REQUIRE A PROFESSIONAL ENGINEER. NOTIFY YOUR CEU FOR ASSISTANCE.

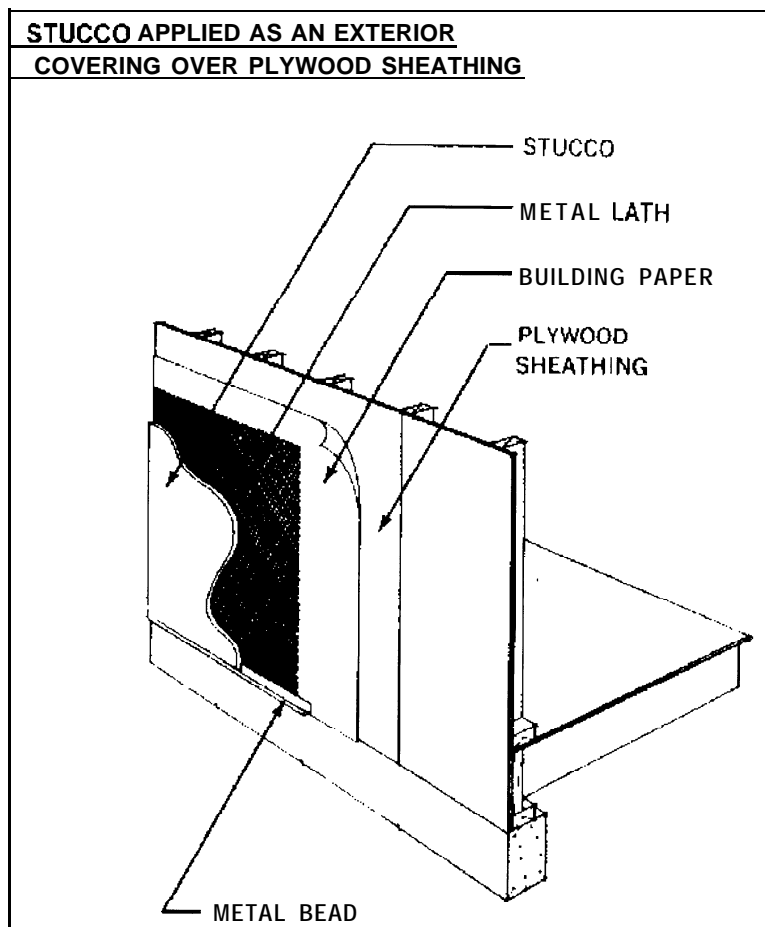
FOR MORE INFORMATION SEE PAGES 280-297 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT



Balloon-frame construction.



SECTION 4: EXTERIOR WALL FINISHES



A. PURPOSE :

Exterior wall finishes should provide an attractive covering for the building or structure. The covering should be compatible with other buildings or structures in the area. The finish must provide complete weather protection for the building and the structural wall.

B. TYPES :

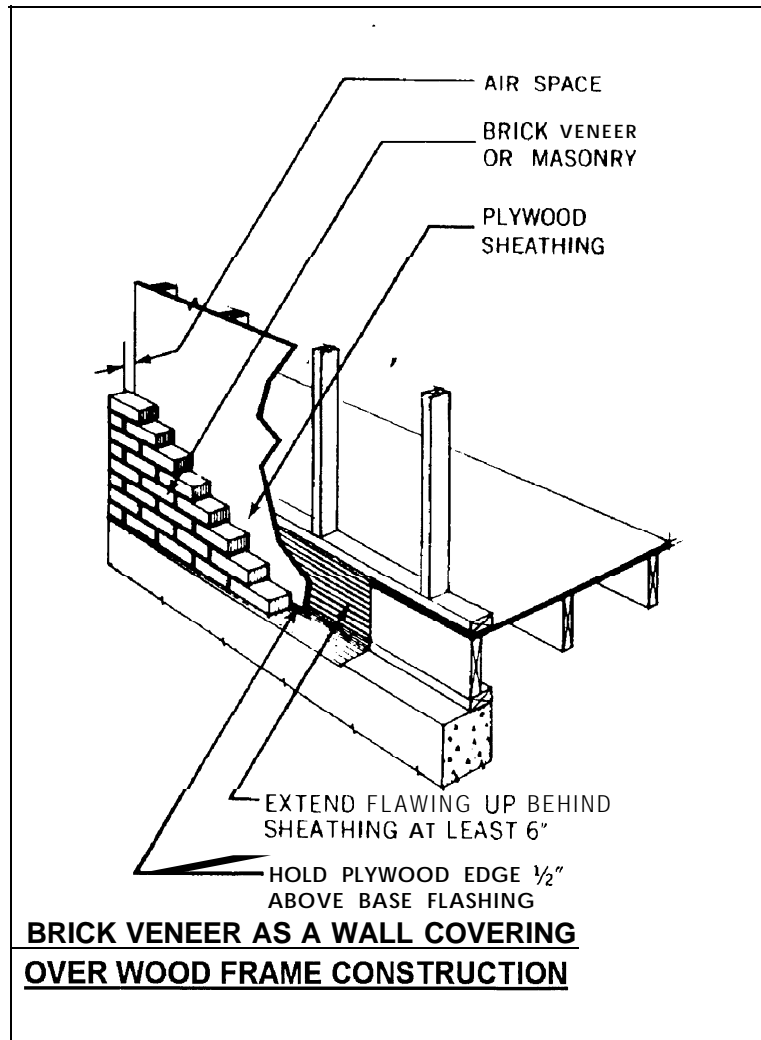
- a. Wood Planking
- b. Wood Sheathing
- c. Brick and Mortar
- d. Stucco
- e. Dryvit
- f. Aluminum or Metallic Siding
- g. Vinyl Siding
- h. Sealed Cement Block or Concrete

C. COMMON DEFECTS

Many common defects may exist in the exterior wall finish. These defects must be corrected to alleviate continuing damage to the structural members and interior finishes. Damage usually results from moisture being blown through cracks in brick, block, stucco, or dryvit finishes. In the case of wood, vinyl, or aluminum siding, there may be holes or sections missing caused by wind or moving objects puncturing the finish. Moisture will also migrate into the wall or interior finish by capillary action if the exterior finish does not maintain a continuous waterproof barrier and if water, ice or snow is allowed to contact any surface other than the exterior finish. Moisture will lead to serious maintenance problems and must not be allowed to penetrate the exterior finish. Moisture will cause dry-rot in wooden structural members, encourage insect and termite infestation, and

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cause mold and mildew which may eventually be visible on interior walls. Migrating moisture will cause flaking or peeling of interior painted surfaces and damage or destroy floor coverings.



D. INSPECTION PROCEDURE

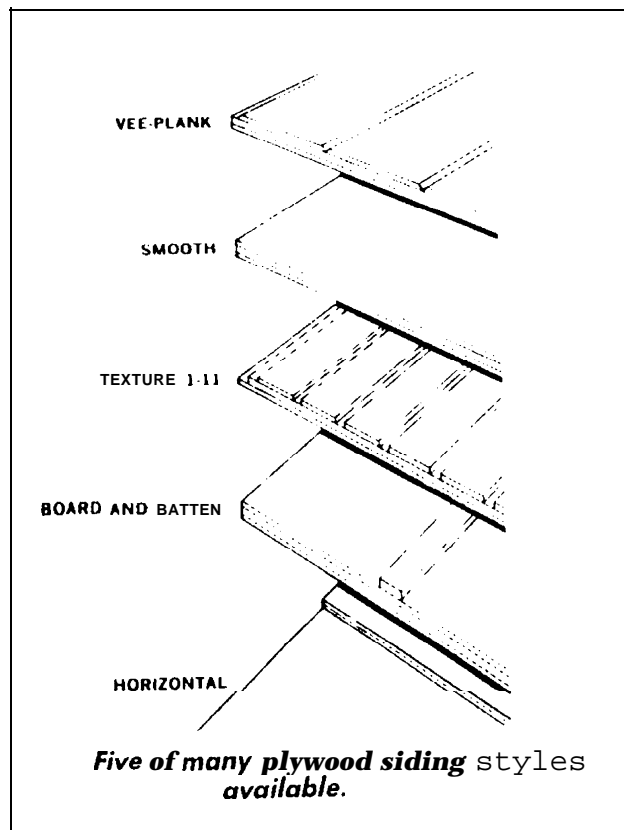
- a. Identify finish type
- b. Inspect concrete or cement blocks for cracks or holes. Paint or sealer must not be flaking, blistering, or missing. Check for loose or missing mortar between cement blocks.
- c. Inspect brick and mortar finishes for cracked or split brick. In cold climates, brick faces will freeze and split

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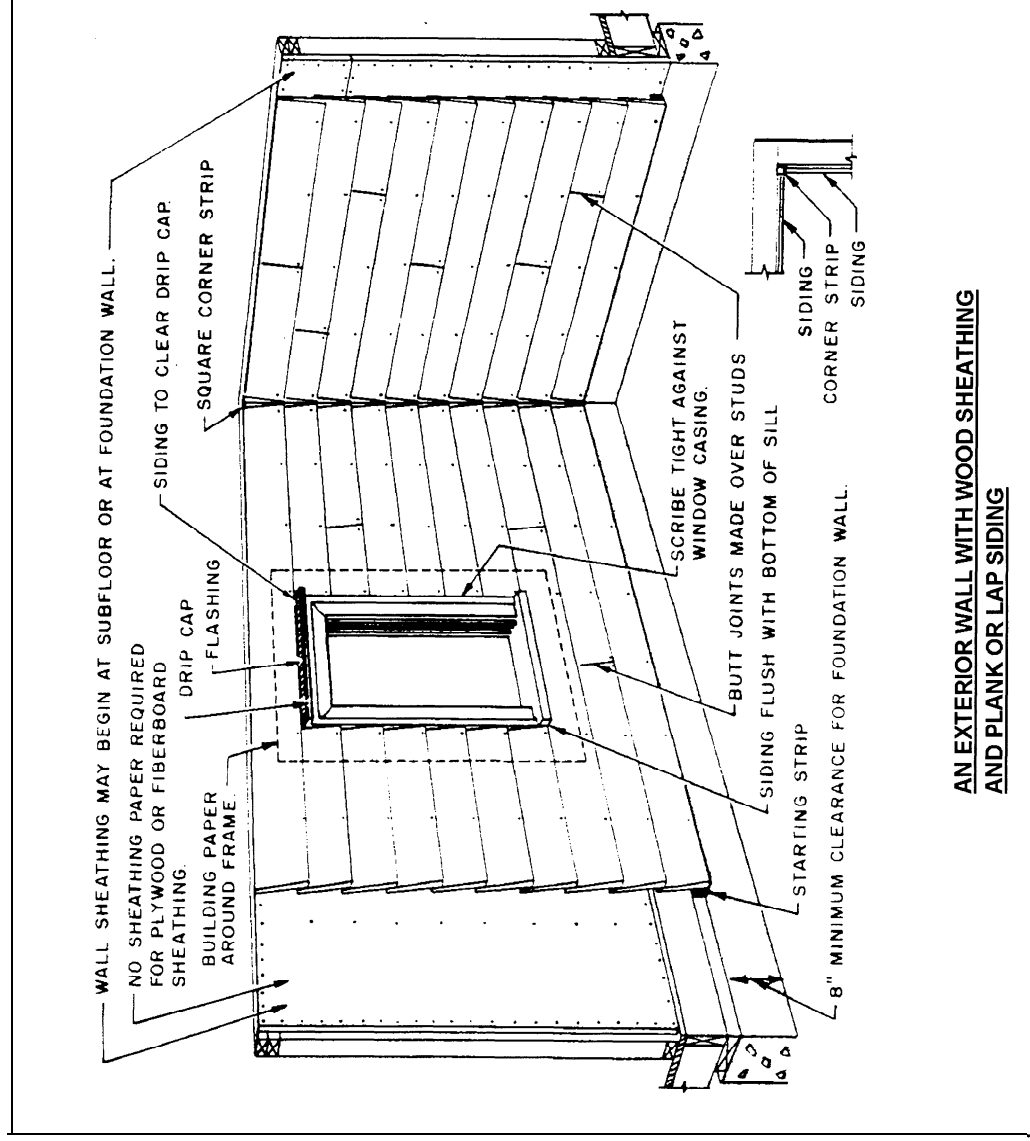
- off if water is allowed to penetrate the face. A clear masonry sealer will prevent this from occurring. Inspect for loose or missing mortar.
- d. Inspect stucco or **dryvit** for cracks, holes or stains. Water will penetrate stucco if it is not properly sealed. Rust stains or cracks will-result. Ensure proper adhesion of paint.
 - e. Inspect wood siding products for warps, splits, delamination, swelling, rusted fasteners, loose boards, rot, holes and faded or peeling paint. Remember that paint is the waterproofing component of wood siding. Any and all peeling paint should be repaired.
 - f. Inspect vinyl, aluminum or metallic siding including eaves and **soffits** for dents, holes, bows, and wrinkles. Note all loose or missing panels.

E. RESULTS AND CORRECTIVE ACTION

- a. Problems discovered in the exterior finish could be the result of a more serious problem caused by a cracked or settling foundation.
- b. All discrepancies noted during the inspection should be corrected locally or placed on the appropriate backlog following the procedures set forth in Section 1.
- c. All holes, cracks, tears, or other voids that would allow water and/or air to penetrate the exterior finish should be repaired promptly to prevent damage to the wall structure.

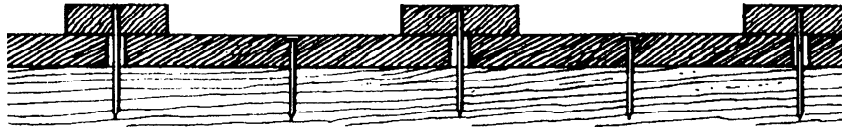


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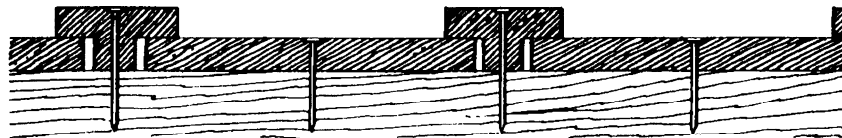


FOR MORE INFORMATION SEE PAGES 280-297 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

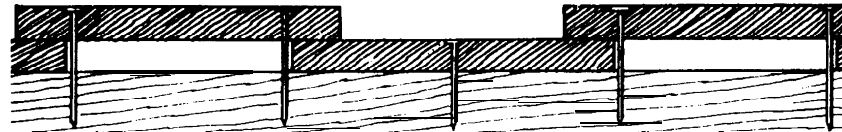
VARIOUS BOARD AND BATTEN SIDING CONFIGURATIONS



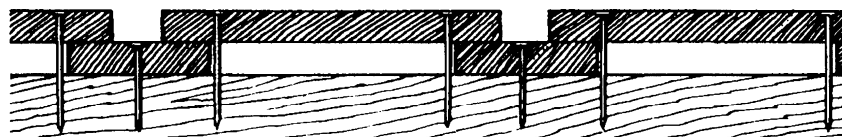
STANDARD **BOARD AND BATTEN**: One **8d** siding nail **is** driven midway between edges of the **underboard**, at each bearing. Then apply **batten** strips and nail with one **10d** siding nail at each bearing so that shank passes through space between underboards.



SPECIAL **BATTENS**: A T-shaped batten or standard batten nailed over a vertical nailing strip, is nailed exactly the same as the standard method; however, in this case an exceptionally good bearing is provided while driving nail through the batten.



BOARD ON BOARD: Apply underboards first, spacing **them** to allow 1 **1/2-inch** overlap by outer boards at both edges. Use standard nailing for underboards, one **8d** siding nail per bearing. Outer boards must be nailed twice per bearing to insure proper fastening. Nails, having some free length, do not hold outer boards so rigidly as to cause splitting if there is "movement" from humidity changes. Drive **10d** siding nails so that shanks clear edges of underboard approximately **1/4-inch**. This provides **sufficient** bearing for nailing, while allowing clearance to enable underboard to expand slightly.



REVERSE **BATTEN**: Nailing is similar to board on board. Drive-one **8d** nail per bearing through center of under strip, and two **10d** siding nails per bearing through **outer** boards.

SECTION 5: ROOF STRUCTURES

A. PURPOSE

The roof structure contains the framing members that when joined together distribute the weight of the roof system to the exterior structural walls and to interior load bearing walls. As the roof sheathing is applied to the rafters it becomes a component of the roof structure. Ceiling joists are considered a part of the roof structure because they aid in evenly distributing the weight of the roof to load bearing walls. The roof structure must be of adequate original design and free from structural defects in order to support the weight loads imposed on the roof system. Weight is imposed on the roof structure by the roof covering (shingles, tile, slate, etc.), ice and snow accumulation, rain water and wind force.

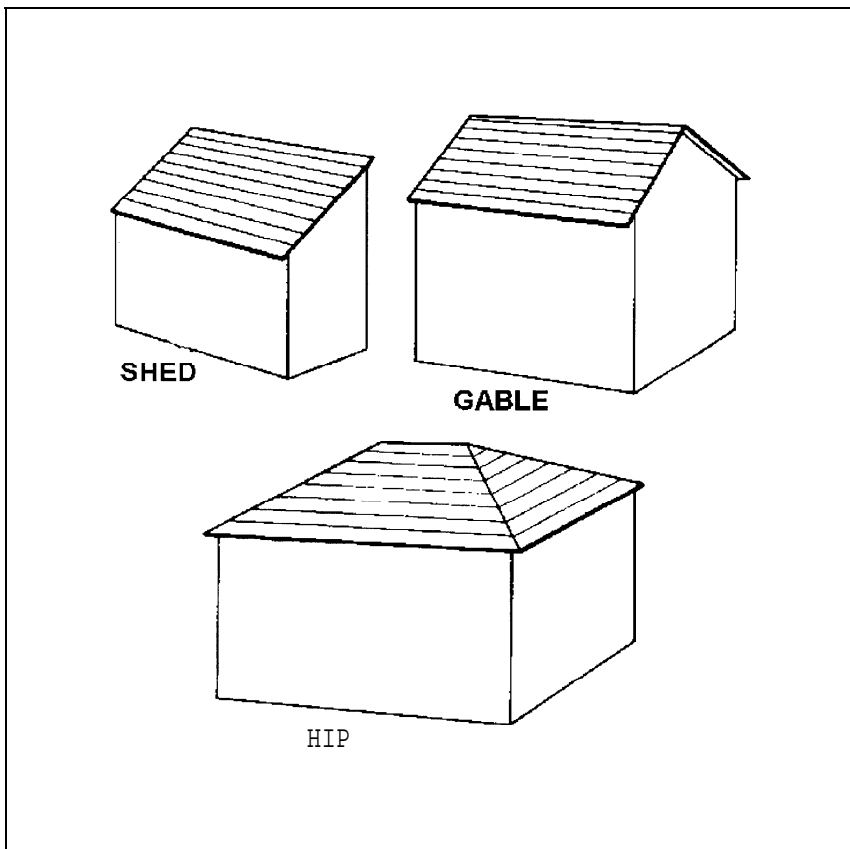


Figure 1: ROOF FRAMING TYPES

B. TYPES

- a. Flat
- b. Gable
- c. Hip
- d. Shed
- e. Gable or Hip with Valleys

COMMON DEFECTS

The most common defects found in roof structures are weaknesses resulting in sagging or springy sheathing and rafters. If not corrected, this sagging will eventually show itself in the ceiling joists, resulting in a drooping ceiling.

Common causes for

weaknesses that appear in roof structures are inadequate or faulty original construction design, overlooked leaks resulting in rot, excess old roofing material allowed to remain under new roof coverings and sometimes termite and insect infestation.

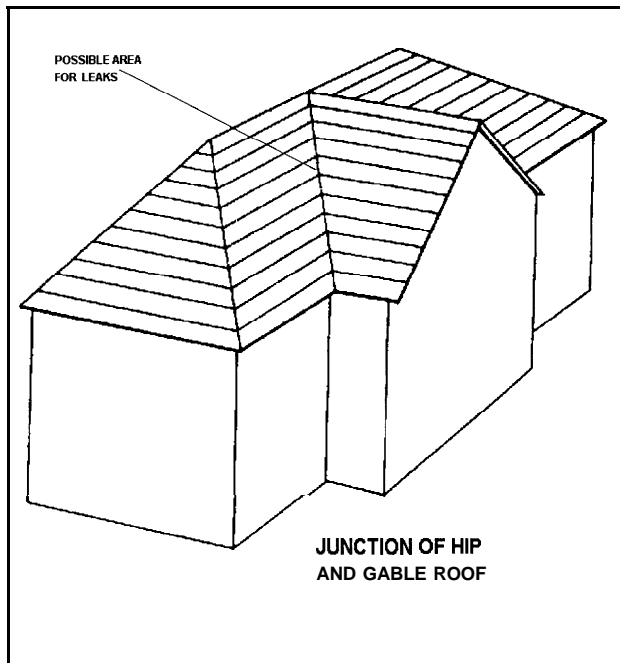


Figure 2: COMBINATION OF HIP AND GABLE ROOF

D. INSPECTION PROCEDURE

⇒ NOTE

THIS INSPECTION IS FOR THE ROOF STRUCTURE ONLY, ROOF COVERINGS WILL BE ADDRESSED IN A LATER SECTION.

- a. If composition shingles are installed, no more than one previous installation of shingles is allowed to remain on the roof. The weight of the excess shingle material stresses the roof structure. Count the number of shingle installations existing.
- b. Visually inspect roof line; look closely for any sags or droops between rafters. This will be evident by a wavy appearance. This condition can be caused by roof sheathing that is too thin to span the distance between rafters and/or the rafters installed too far apart during construction. Plywood roof sheathing should never be less than 1/2" nor should the rafters be placed more than 24" apart. Sagging may also be present if there is additional weight from old shingles allowed to remain on the roof.
- c. Moisture and rot will cause sagging to occur in the sheathing, rafters and joists. When it is possible to view the underside of the sheathing from the attic access, look diligently for signs or presence of moisture penetrating the roof covering. Moisture will cause sheathing to delaminate and to lose strength. Long term exposure to excess moisture will allow rot to attack and weaken rafters and joists. Replacement and repair of this type damage can be very expensive.
- d. Insect and termite infestation resulting in damage can occur in roof structures but is rare. See section 3 for information regarding this type of damage.
- e. Sagging may also occur when the dimensional size of the rafters is insufficient for the span or length of the rafters. National Building Codes specify minimum dimensions allowed. Document the nominal size of the roof joists.

E. RESULTS AND CORRECTIVE ACTION

- a. Isolated areas of weakness can be repaired by "scabbing" additional roof joists to the existing joists when access is possible from the attic. You may also be able to **reenforce** sagging roof sheathing by nailing lumber of the same dimension perpendicular between rafters.
- b. Isolated areas of rotten or delaminated sheathing should be replaced locally. If the rot has affected rafters and other structural members beyond local capability, initiate an **SSMR** to document the deficiency.
- c. The discovery of insect or termite damage should be referred to a professional exterminator to determine if it is active or previous damage.
- d. Initiate **SSMR's** to document all existing deficiencies discovered during the assessment.

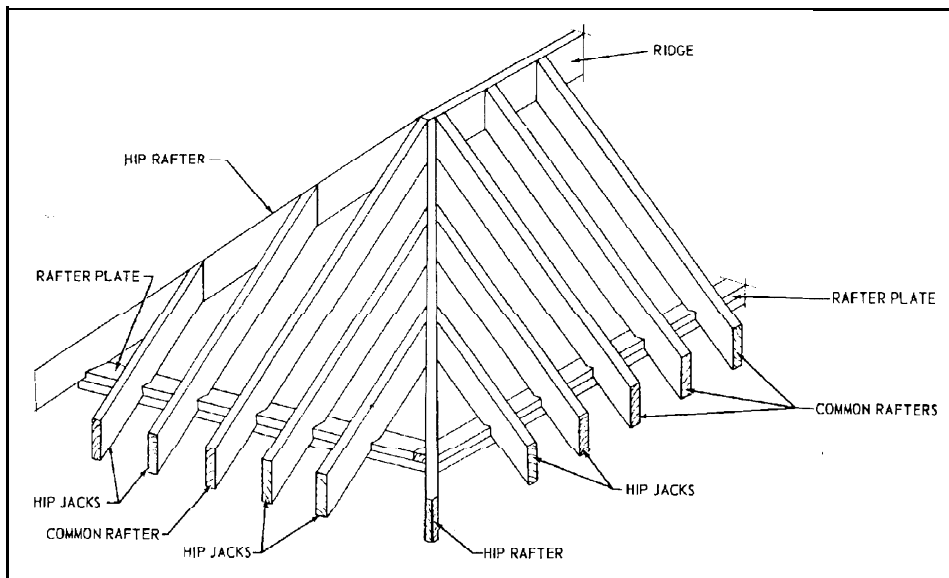


Figure 3: TYPICAL ROOF FRAMING

**FOR MORE INFORMATION SEE PAGES 260-261 IN THE STANLEY
COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND
IMPROVEMENT**

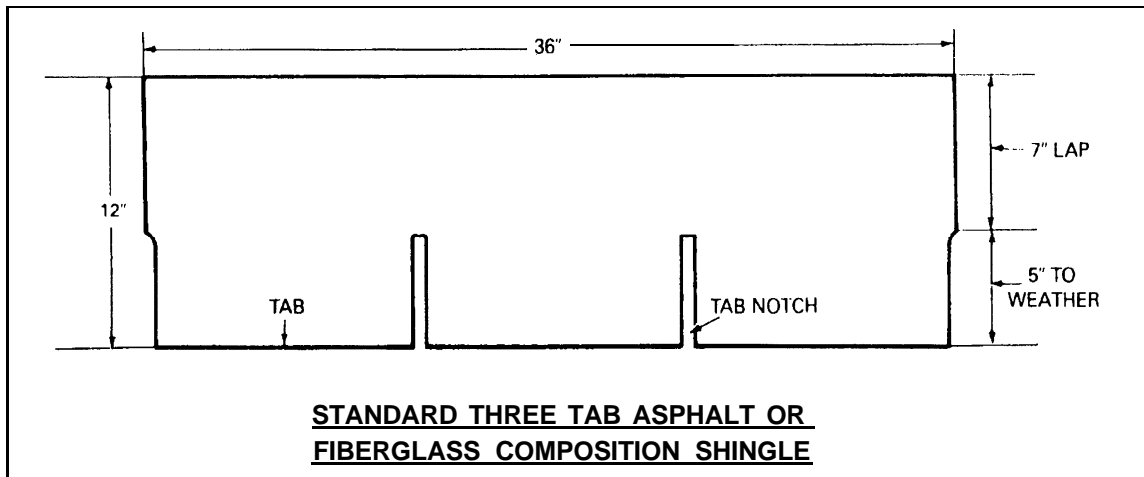
SECTION 6: ROOF COVERINGS

A. PURPOSE :

The primary purpose of the roof covering, regardless of type, is to provide a waterproof barrier that prevents all water from entering the structure. Most roof coverings will shed water away from the building. With the exception of flat roof coverings, roof coverings will also add aesthetic value either by color or type. They should be harmonious with other coverings in the surrounding community.

B. TYPES :

- a. Built-up (found on flat roofs)
- b. Rubberized Membrane (designed for flat roofs)
- c. Fiberglass Composition (made in 3 tab or rolled products)



- d. Asphalt Composition (made in 3 tab or rolled products)
- e. Slate
- f. Tile
- g. Metal

C. COMMON DEFECTS :

The common defect found in all roof coverings is deterioration caused by constant, direct exposure to weather elements. The extremes of heat and cold, rain and snow, and radiation from the sun deteriorate all roof coverings. Visible defects such as torn, broken, cracked or missing pieces of the roof covering may be caused by high winds or hail. Poor planning for replacement results in curling and crumbling roofing products. Roof coverings are life-cycle items and their replacement should be planned to avoid "crisis" situations. All roof coverings are subject to failure, which results in leaks. The leaks result in damage.

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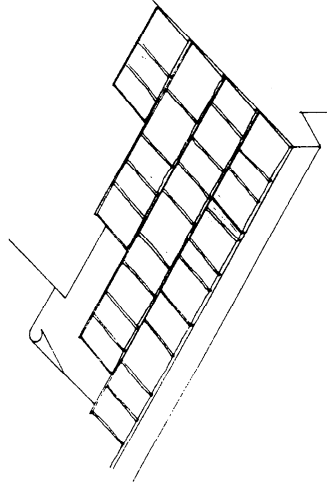
⇒ NOTE

*ROOF LEAKS DO NOT GO AWAY; THEY ONLY GET WORSE.
REPAINTING THE INTERIOR CEILING TO HIDE WATER STAINS
DOES NOT REPAIR THE LEAK.*

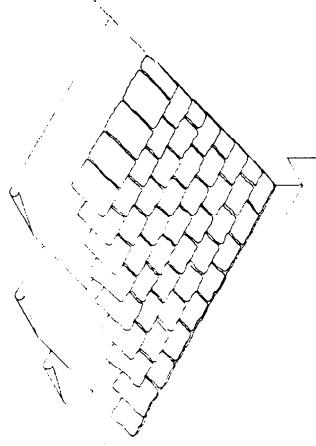
D. INSPECTION PROCEDURE :

- a. In the case of flat roofs, determine if the covering is rubberized membrane or built-up. Built-up is usually recognized by the rock or gravel ballast cover. The ballast protects the tar and felt from the sun's rays. Rubberized membrane roofs will not have ballasting.
- b. Look closely for any bubbles or blisters on flat roofs. Water will turn to steam in the event it leaks through the surface and becomes trapped in the layers of the covering causing the formation of bubbles and blisters. These bubbles and blisters will eventually split, allowing water to enter the structure. Note all blisters and splits in the top layer.
- c. Look for depressions or puddles in the flat roof surface that might indicate structural failure.
- d. Check rubberized membrane roofs for signs of separation at all seams. Check rubber for signs of deterioration.
- e. On all flat roofs, look closely for any foreign objects that could puncture the surface. Typical foreign objects found on roof surfaces are loose nails, screws, bolts, tree limbs and, often, parts of **childrens'** toys.
- f. Pitched roofs are most often covered with composition shingles and should be inspected for common defects. Fiberglass and asphalt composition shingles are both made using asphalt to retain a granular mineral ballast. The only notable difference between them is that fiberglass shingles have the asphalt applied to a fiberglass mat while the asphalt shingle uses a type of cardboard for the body of the shingle.
- g. Look closely at the base of downspouts or in guttering for an excess amount of the mineral coating. Shingle deterioration allows the granules to wash away.
- h. Composition shingles should provide a somewhat regular surface; if the shingles appear to be bulging, cupped on the ends, or cracked, the shingles have failed. Often the shingles will crumble as you walk on them, a clear sign the shingles have reached their full life span.
- i. Inspect for any apparent loose or missing shingles. Composition shingles are very susceptible to being blown away or dislodged during high winds.

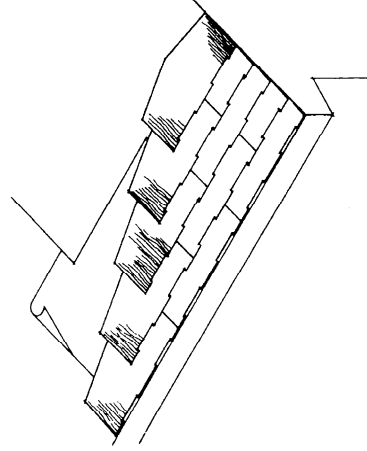
VARIOUS TYPES OF ROOF COVERING



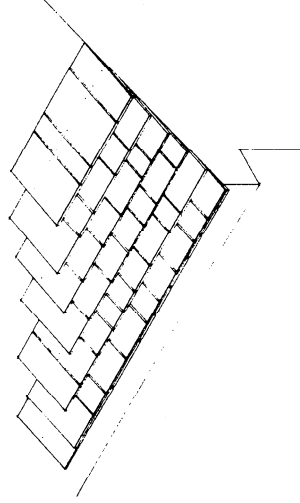
Aluminum or Steel Shingles



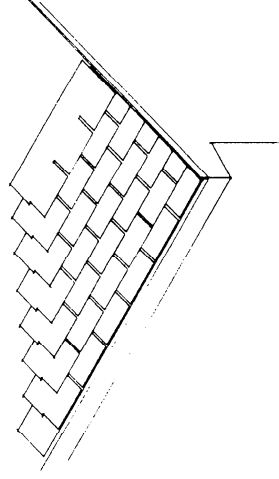
Slate Shingles



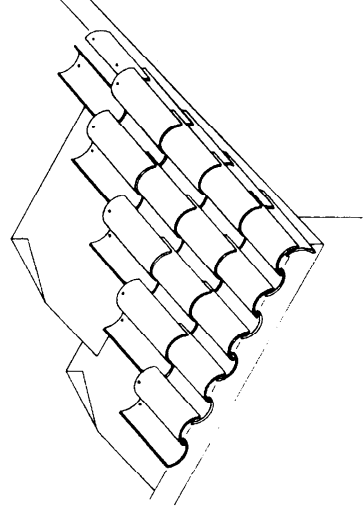
Asbestos Shingles



Wood Shingles



Asphalt Shingles



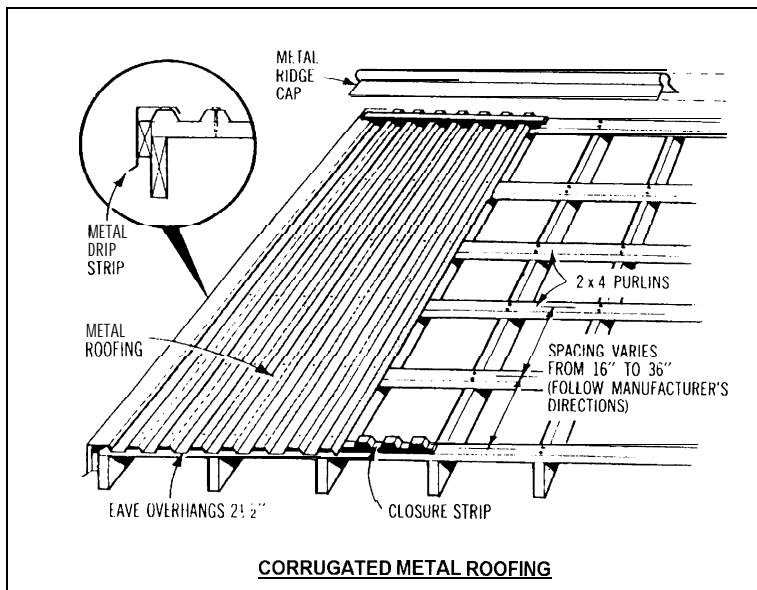
Mission Tile

- j. On slate or tile roof coverings, look for missing, cracked or broken tiles.
- k. Wind and corrosion are the two major enemies of metal roof coverings. Bent or loose metal panels will be readily visible while a closer inspection might reveal rust or corrosion.

MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

⇒ NOTE

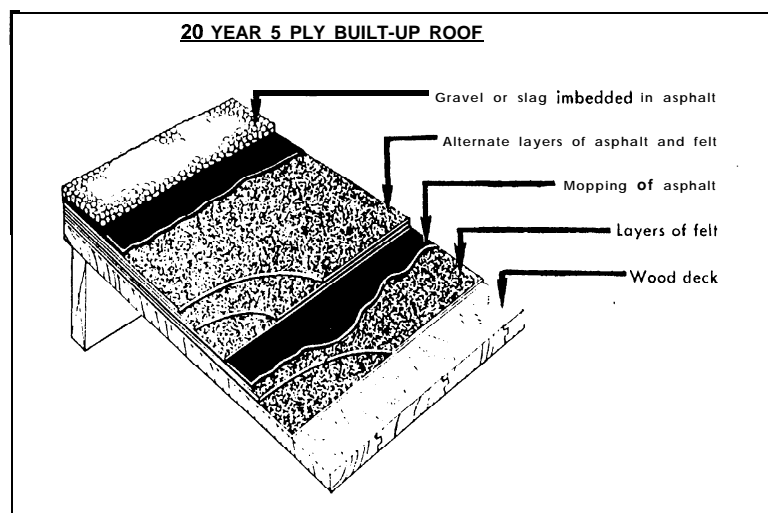
ALWAYS INSPECT ROOF COVERINGS FOLLOWING A MAJOR HAIL OR WIND STORM. IT IS BEST TO INSPECT ROOF COVERINGS WHEN THE AMBIENT AIR TEMPERATURE IS MODERATE. EXTREME COLD OR HOT TEMPERATURES MAKE COMPOSITION AND FLAT ROOF COVERINGS PRONE TO DAMAGE FROM FOOT TRAFFIC.



E. RESULTS AND CORRECTIVE ACTION :

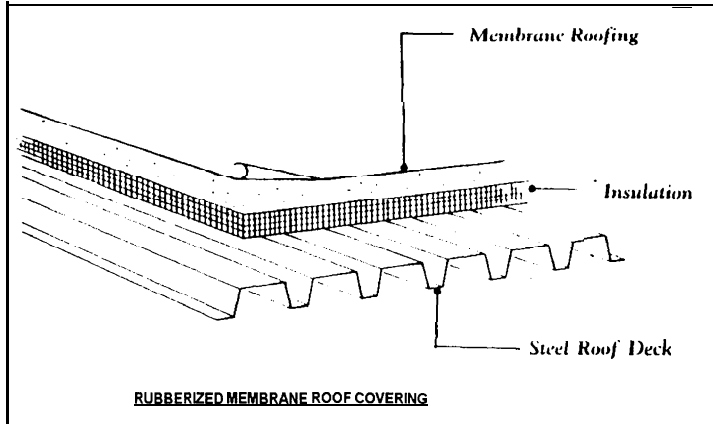
- a. All defects resulting in apparent leaks should be repaired immediately. Failure to make repairs, even if temporary, could result in extensive and expensive damage.
- b. Given the track record of flat roofs, consideration should be given

to the installation of structural members to provide a pitched roof structure with a composition shingle roof covering. Your CEU can provide design and engineering assistance. The finished product will be visually more appealing and cost effective to maintain.



- c. Ensure SSMR's are submitted to replace roof coverings prior to the expiration of their functional life span. Priority

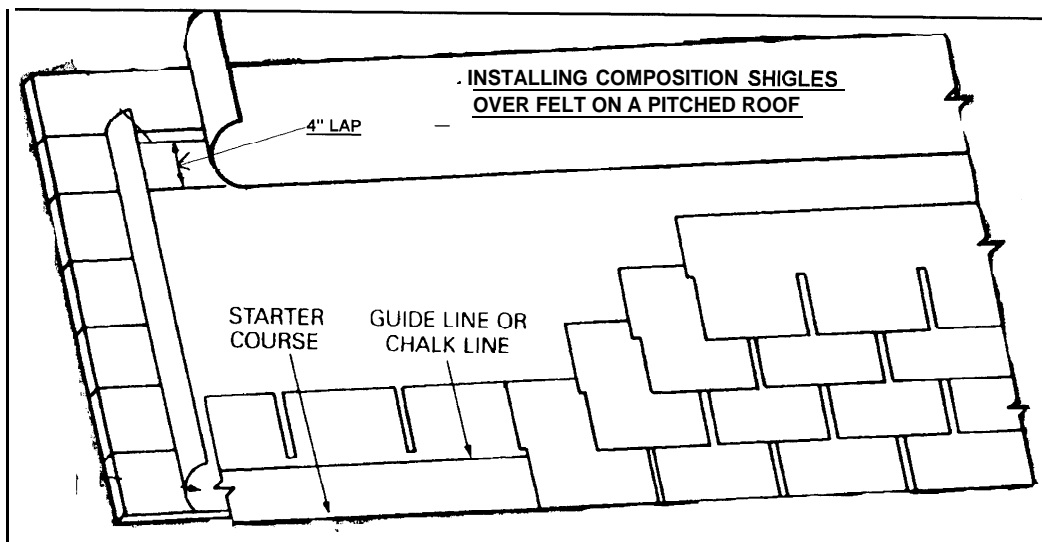
MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING



should be given when the roof covering shows visible signs of failure. This would be evidenced by increased reports of leaks, cracked or cupped composition shingles or visible cracks and tears in a flat roof covering.

d. Replace all missing shingles when discovered. In the case of wind or hail

- damage, the age of the covering should be considered to determine the cost benefit of replacement versus repair.
- e. Only those contractors authorized by the manufacturer should be allowed to effect repairs to rubber membrane roof coverings.
- f. All required repairs and replacements beyond unit level capability should be fully documented via a SSMR.

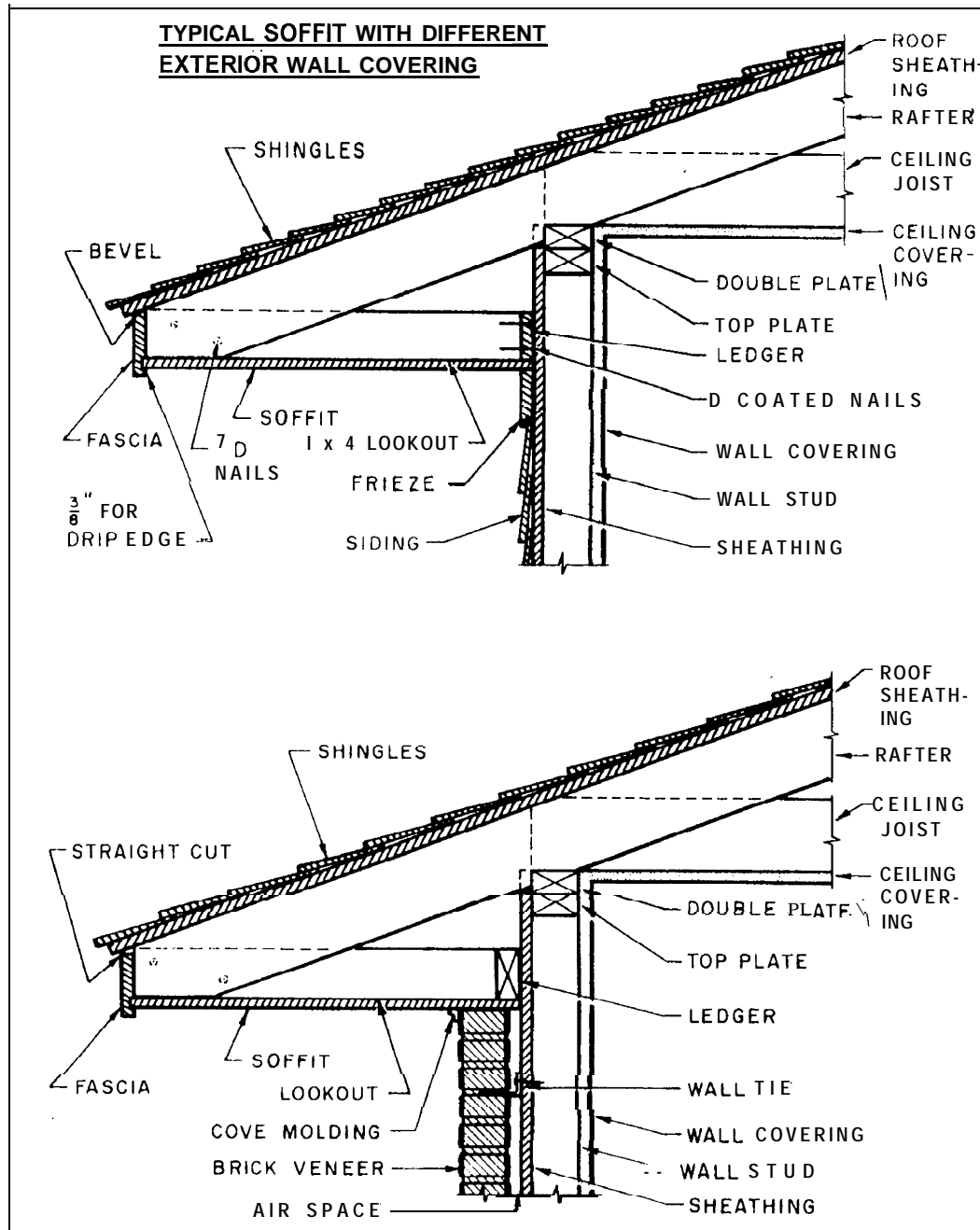


FOR MORE INFORMATION SEE PAGES 261-275 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 7 : ROOF TRIM

A. PURPOSE :

Roof trim, sometimes called roof-overhang, includes the soffit, fascia board and the structural members to which they are attached. Guttering and downspouts are secured to the roof trim. Not all roof trim will have a soffit.

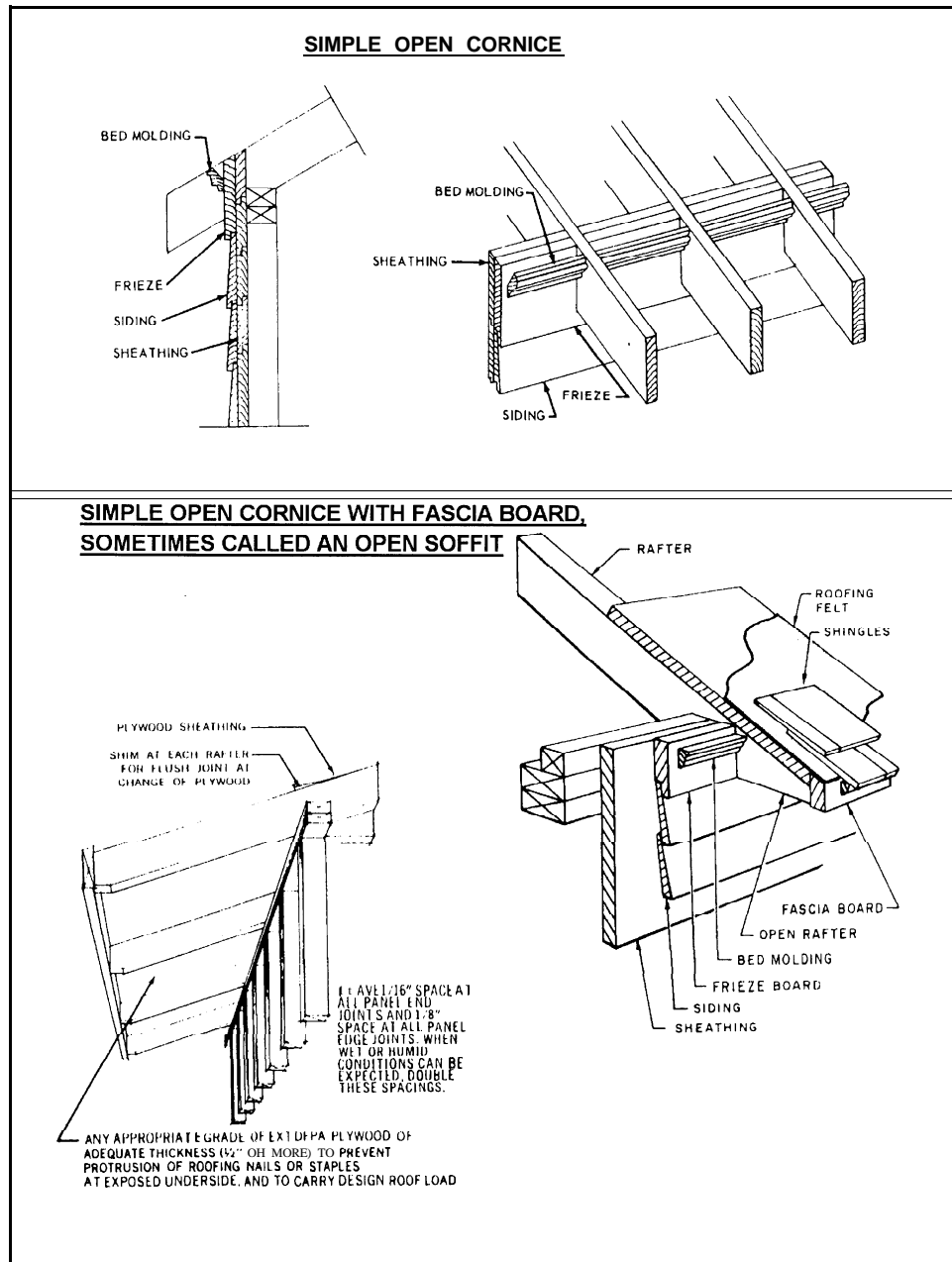


MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

Roof trim and overhang protects exterior siding by minimizing direct exposure to rain, ice, snow and sunlight. Overhangs help shed water away from the foundation, reducing erosion and water migration problems. Some overhangs will assist with energy conservation by shading sunlight from the windows. The fascia and overhang can add significant visual appeal to a building.

B. COMMON DEFECTS :

Wood rot is the primary common defect found in roof trim. Termite and insect damage may also be present in some cases. Given the visual prominence of the roof trim, minor defects such as peeling paint will be readily visible and will give the impression of a poorly maintained facility. Peeling paint will also accelerate wood rot by allowing the intrusion of moisture.



C. INSPECTION PROCEDURE :

- a. Visually inspect the soffit and fascia for flaking or peeling paint.
- b. Look at the soffit and fascia for signs of rot or insect damage. A screwdriver or similar object may be used to tap along the surface, listen for any hollow sounds indicating rot or insect damage that might be concealed by the paint envelope.

⇒ **NOTE**

It may be necessary to pry guttering away from the fascia to visually inspect for rot that would otherwise be concealed by the guttering. The most severe rot can occur behind the guttering.

- c. Inspect soffit vents for vegetation, nests, spider webs, or other debris limiting the air flow through them.
- d. Look at the ground around the foundation for signs of erosion caused by rain runoff dropping too close to the foundation. This can be caused by an-insufficient overhang distance and might indicate the need for guttering.

D. RESULTS AND CORRECTIVE ACTION :

- a. Areas of flaking and peeling paint should be repaired to prevent the intrusion of moisture.
- b. All insect damage discovered should be referred to a professional pest control company to determine if it is active or past damage. Replace all affected roof trim components.
- c. Roof trim damaged by rot should be replaced. A determination should be made regarding the cause of the rot if it occurs prematurely.
- d. Clear debris from soffit vents; replace if deteriorated to ensure free air flow through the attic space.
- e. Correct erosion problems by installing guttering or extending the overhang distance. Consult with your CEU to determine the best solution.
- f. Document all discrepancies not corrected locally with a SSMR.

FOR MORE INFORMATION SEE PAGES 260 AND 295 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 8 : ROOF FLASHINGS

A. PURPOSE :

Roof flashings serve as transition components maintaining a waterproof barrier where roof coverings cannot provide complete protection. Flashings are typically found at the intersection of the roof and chimneys, plumbing vent protrusions and at parapet walls extending above the roof. Flashings found at the intersection or valley between two roof sections are called valley flashings. Flashings are either manufactured for universal application or may be custom-made for a particular application.

B. TYPES :

- a. Lead
- b. Metallic
- c. Rubber
- d. Plastic
- e. Felt Paper

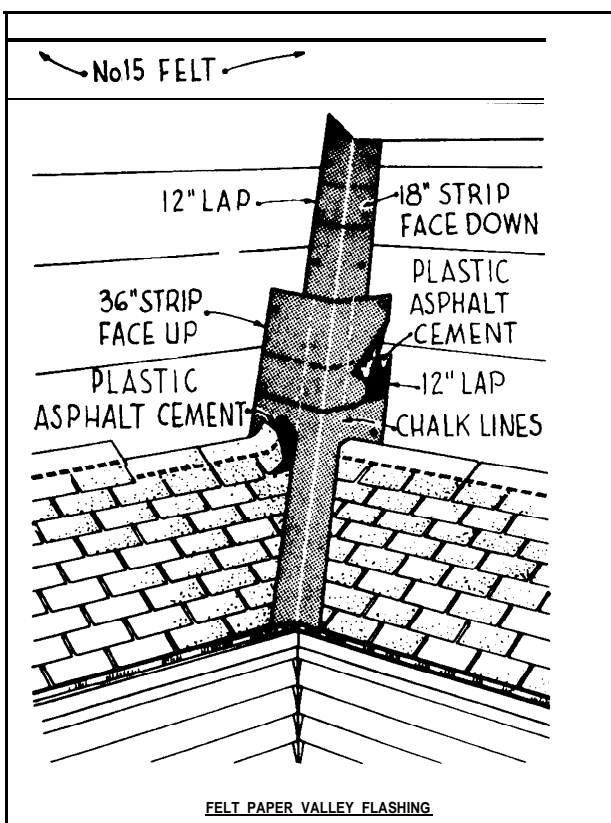
COMMON DEFECTS:

Leaks are the most common defect associated with roof flashings. Leaks may be caused by a number of different factors. Examples of these are rust and deterioration in metallic flashings; dry rot and cracks in rubber, plastic, or felt paper flashings.

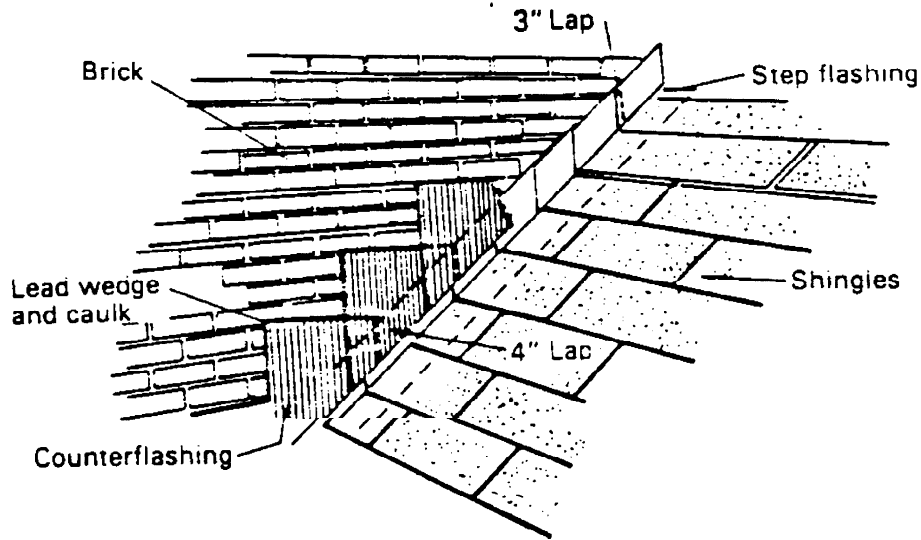
Separation of the flashing and the surface it joins will occur as sealers age and continually expand and contract with temperature differentials. This separation will result in leaks.

D. INSPECTION PROCEDURE :

- a. Identify flashing types.

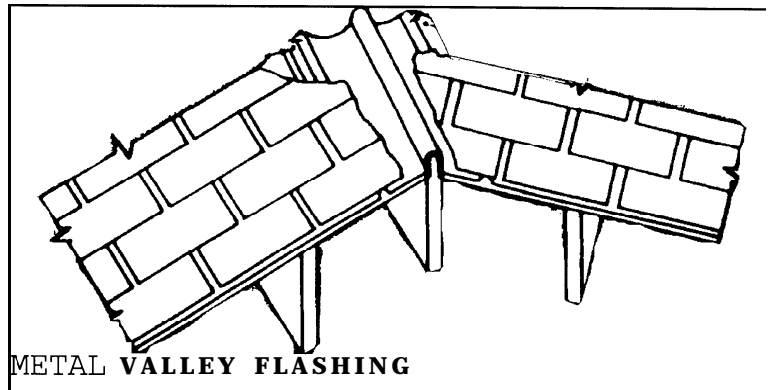


METAL FLASHING AT VERTICAL WALL INTERSECTION.
ADDITIONAL COUNTERFLASHING OPTIONAL



- b. Look at all metallic flashings. Note all areas of rust or severe corrosion that may allow water to pass through the flashings. Valley flashings should be included.
- c. Look at all rubber, plastic, or felt paper flashings for signs of dry rot or weather exposure damage. This damage usually is visible in the form of cracks or tears in the flashing material. General deterioration may also be present from exposure to the sun's radiation.

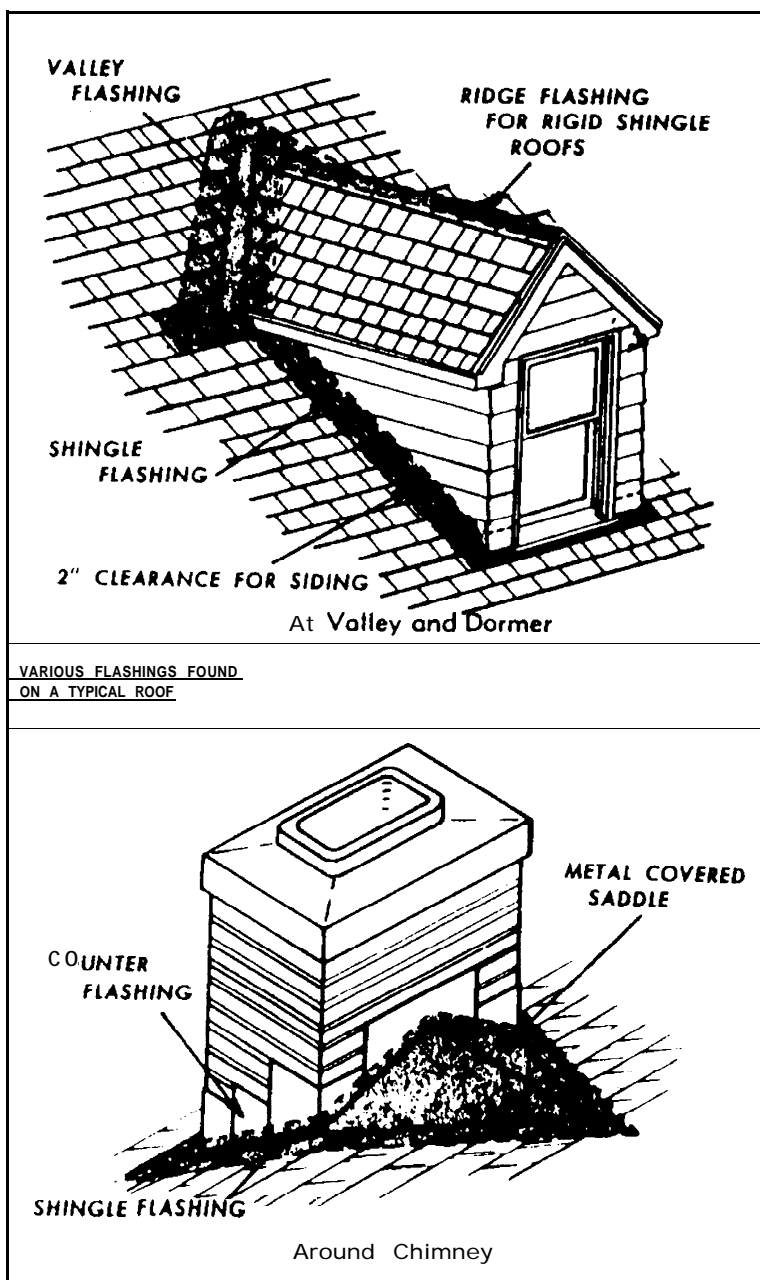
- d. Closely inspect the attachment or junction point of all flashings to walls, chimneys or plumbing vents (vertical surfaces) to ensure sealants remain pliable and intact. Look for any missing, brittle or cracked sealers.



- e. Inspect valley flashings to ensure a watertight seal exists between the flashing and the roof covering.

E. RESULTS AND CORRECTIVE ACTION :

- a. Sealants should be replaced in areas where the sealant is found to be cracked, brittle or missing.
- b. Replace all rusted or corroded metallic flashings.
- c. Replace all dry rotted or weather deteriorated rubber, plastic, or felt paper flashings.
- d. Flashings are often the source of leaks that are routinely blamed on the roof covering.
- e. Questions regarding flashing installation or replacement should be directed to your servicing CEU.
- f. All flashing problems should be corrected promptly in view of the extensive structural and interior damage that can occur from water damage.

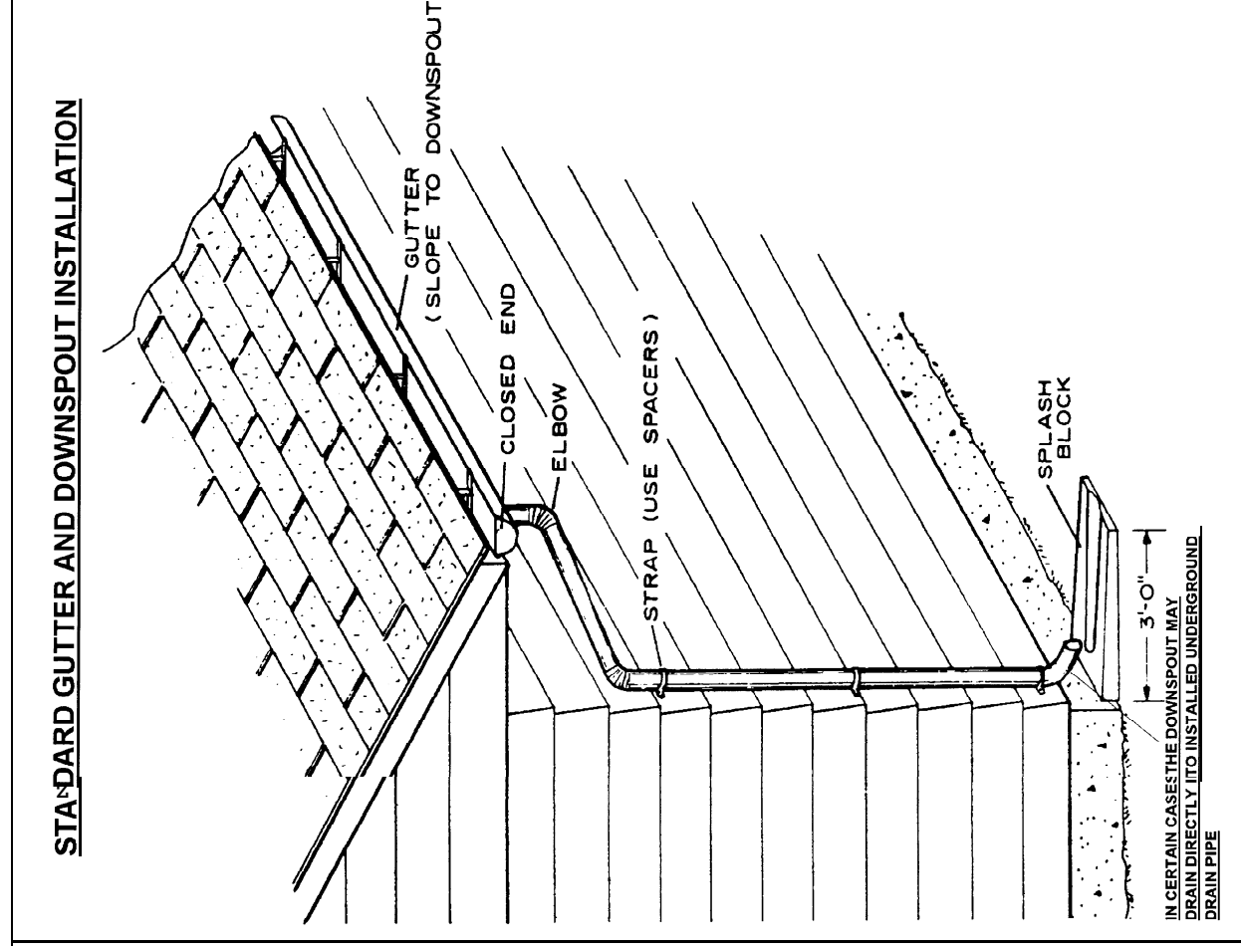


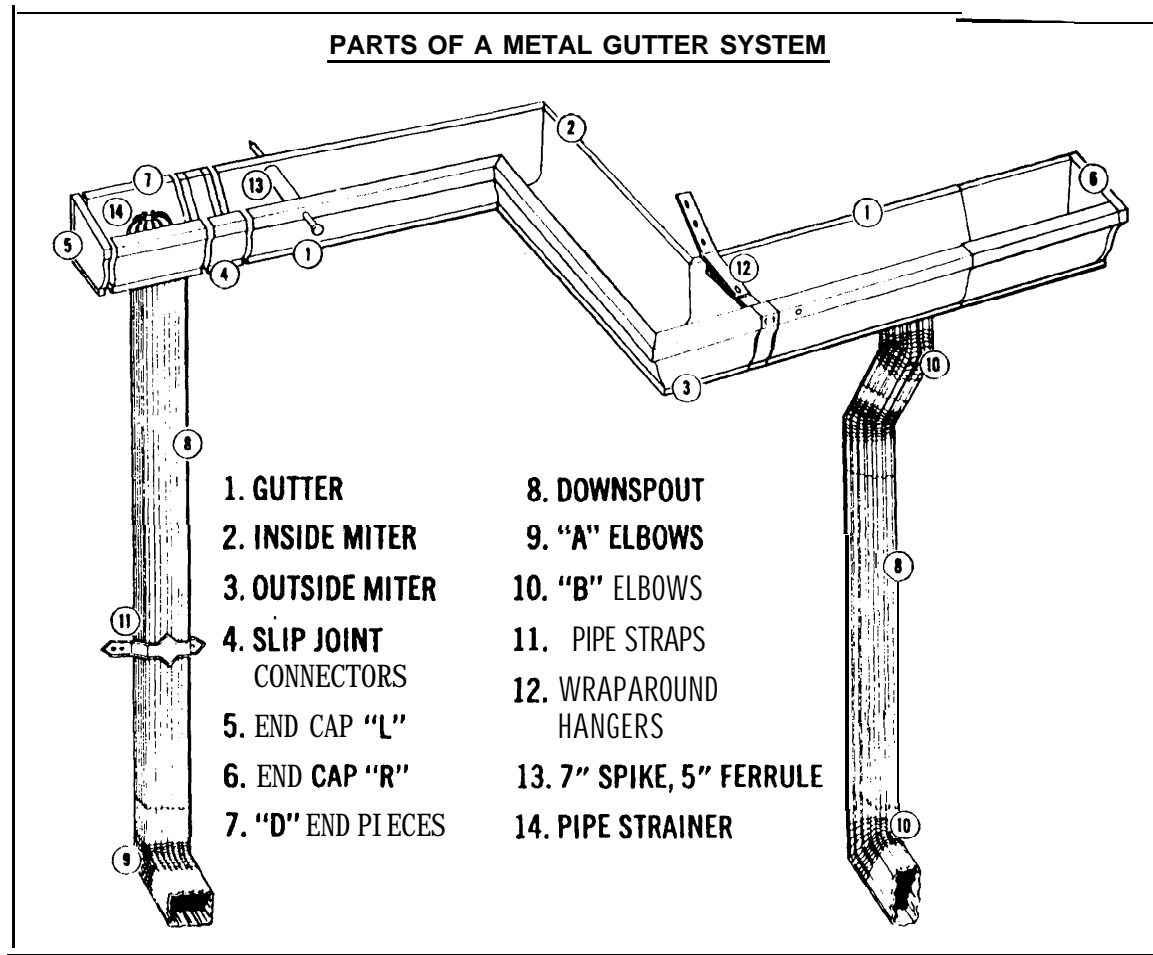
FOR MORE INFORMATION SEE PAGES 260,263,268-269,279 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 9 : GUTTERING AND DOWNSPOUTS

A. PURPOSE :

Gutters and downspouts collect, direct, and control rain water and melting snow runoff from the roof surface. This containment and control of water and slush helps prevent damage to the roof components, exterior wall and foundation.





B. COMMON DEFECTS :

The most common defect found in guttering systems is the inability of guttering to properly drain water away from the roof system and into the downspout system. Several factors can cause this defect to occur. Physical damage, improper drain slope, poor attachment of the guttering to the building, obstructed guttering, clogged downspouts, and improper positioning of downspout discharge are all contributing factors to the existence of a defect. Loose or sagging guttering and downspouts will result when fasteners or rivets corrode or fail.

C. INSPECTION PROCEDURE :

- a. Inspect inside of gutters for standing water or accumulations of mud or silt in suspected low spots.

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- Standing water or low spots indicate improper slope of the guttering.
- b. Inspect the guttering for signs of physical damage evidenced by dents, holes or tears that would prevent a smooth flow of water toward the downspouts.
 - c. Inspect the guttering and downspouts to ensure the mounting brackets and nails are held securely to the building. Pull on the guttering firmly to ensure it will not release as it becomes laden and weighted with water, ice and snow.
 - d. Inspect gutters for accumulations of leaves, toys and debris that would act as a dam causing the gutters to fill and hold water. The weight of standing water will cause the gutter to fall or disconnect from the house.
 - e. Inspect downspouts for clogs. **Toys**, sticks, leaves, tennis balls and other items have all been responsible for clogging downspouts. The weight of water standing in guttering and downspouts will cause them to collapse or fall.
 - f. Inspect downspouts to determine the direction of the water discharge. Look for the presence of splash blocks under downspouts. Determine if the force of water runoff is causing erosion or standing water problems near the building foundation.

D. RESULTS AND CORRECTIVE ACTION :

- a. Remove and reposition all guttering improperly sloped or containing low spots. Failure to properly slope and remove dips and valleys will cause premature failure of the guttering system. Guttering and the associated fastening systems are not designed to support the weight of standing water.
- b. Guttering that is visibly damaged should be replaced.
- c. Renew fasteners and nails on sections of guttering and downspouts that are loose, sagging or otherwise separated from the building.
- d. Clean out gutters and downspouts on a regular basis as local conditions require to avoid excess weight accumulation. Avoid allowing gutters to fill and overflow as this will allow water to migrate into the fascia and roof decking, accelerating the risk of wood rot.
- e. Do not allow erosion around downspouts to continue. This can lead to foundation cracking or settling. Install splash blocks to absorb the force of the water. Certain cases may even require the installation of an underground drainage system.
- f. Ensure downspouts are directing water away from crawl space foundations to avoid the accumulation or puddling of water in the crawl space. This may also require the installation of a permanent drainage system.

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MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

- g. All deficiencies not corrected locally should be documented with SSMR's. Contact your cognizant CEU for information and guidance.

FOR MORE INFORMATION SEE PAGES 111,260,263,270-271,276-277,366 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 10: WINDOWS

A. PURPOSE :

Windows admit natural light and ventilation, providing a view to the outdoors while protecting the interior from the weather. Functionally, some windows contribute to energy efficiency. Windows provide an escape route in the event of a fire.

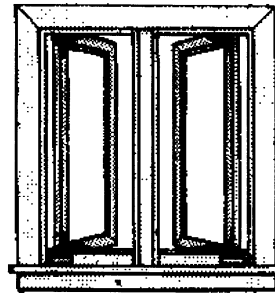
B. COMMON DEFECTS :

Inoperable sashes (*windows that won't open or won't stay open*), broken panes, condensation between thermal panes, wind drafts penetrating through the panes and missing or torn screens are all readily noticeable defects associated with windows. Inadequate or deteriorated glazing may be a defect found in older windows. Second floor and bedroom windows may also be inadequately sized to meet fire egress requirements.

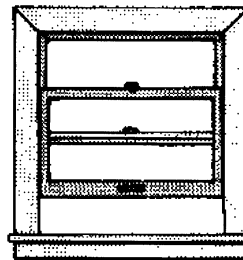
C. INSPECTION PROCEDURE:

- Inspect all windows for broken or cracked panes.
- Visually inspect thermal pane windows for condensation forming in the void between the panes.
- Tap lightly on the window panes using finger tips, listening for loose panes. Look for loose, missing or cracked glazing compound.
- Feel around the perimeter of the window for air drafts.

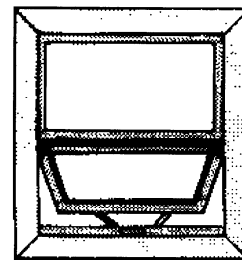
SIX BASIC WINDOW STYLES



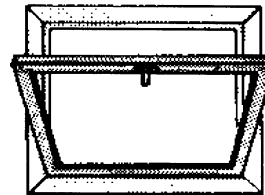
CASEMENT



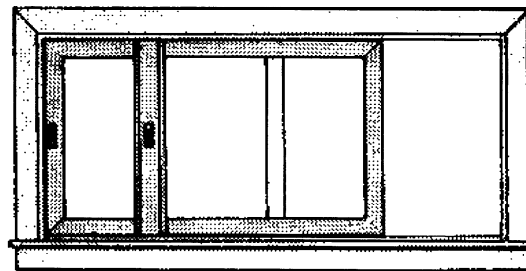
DOUBLE HUNG



AWNING AND FIXED



HOPPER



SLIDING

MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

- e. Ensure all screens are in place and free from holes and tears.
- f. Operate all moveable sashes to ensure smooth and proper operation. Sashes should remain in place when opened.
- g. Measure the size of opening in all windows located above the first floor and in bedrooms-to ensure compliance with fire egress requirements.

⇒ **NOTE**

FIRE EGRESS REQUIREMENTS :

Minimum net clear opening: 5.7 sq. ft.

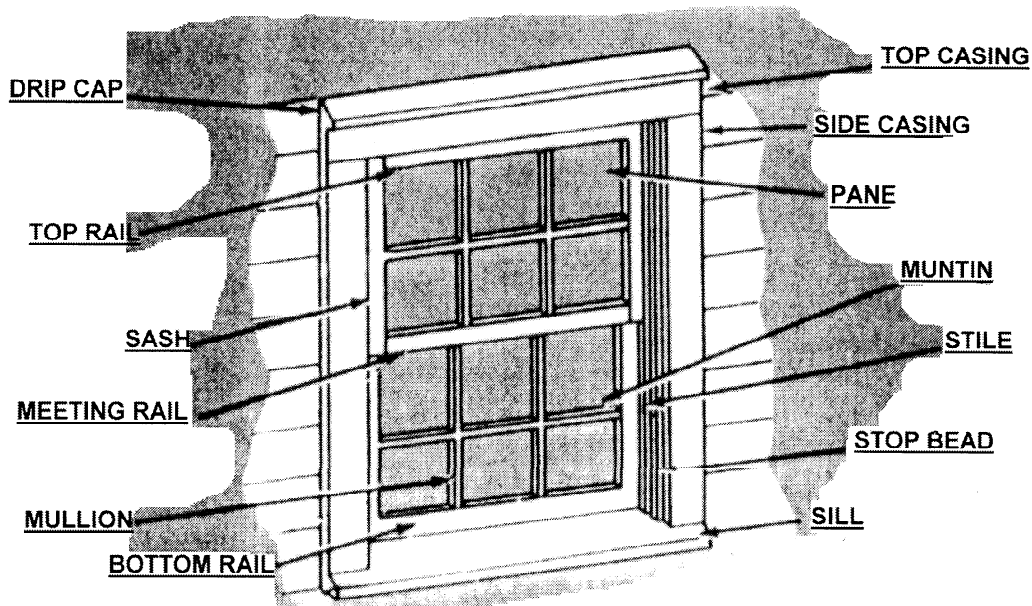
Minimum Width : 20"

Minimum Height: 24"

MAXIMUM SILL HEIGHT : 44" FROM FLOOR

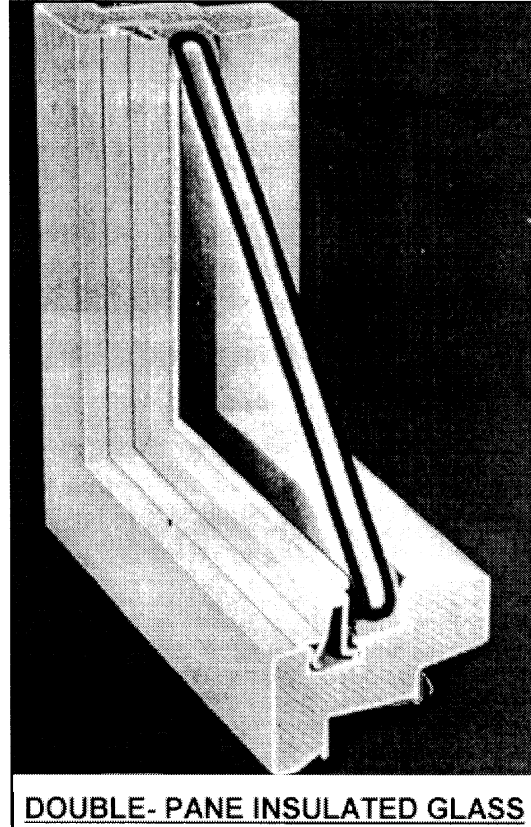
- h. Operate all latches and locks. Ensure windows cannot be opened while locks are secured.
- i. Inspect wooden sashes and sills for signs of rot or deterioration.

PARTS OF A COMMON DOUBLE HUNG WINDOW



D. RESULTS AND CORRECTIVE ACTION :

- a. Replace all broken and cracked panes.
- b. Replace thermal panes that have lost the vacuum seal and have formed condensation.
- c. Replace caulking around loose panes.
- d. Replace weather stripping or caulking where wind drafts are present.
- e. Replace all missing screens.
Repair or replace screens having holes or tears.
- f. Repair or replace all windows with inoperable sashes.
- g. Replace all windows not meeting fire egress requirements.
- h. Repair all locks and latches that do not prevent the sashes from opening.
- i. Replace windows or sills having areas of rotted wood components.
- j. All repairs or replacements not corrected locally should be documented using an SSMR.



FOR MORE INFORMATION SEE PAGES 188-189,218,219-227,300-303,306-308,458-459,463-465 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

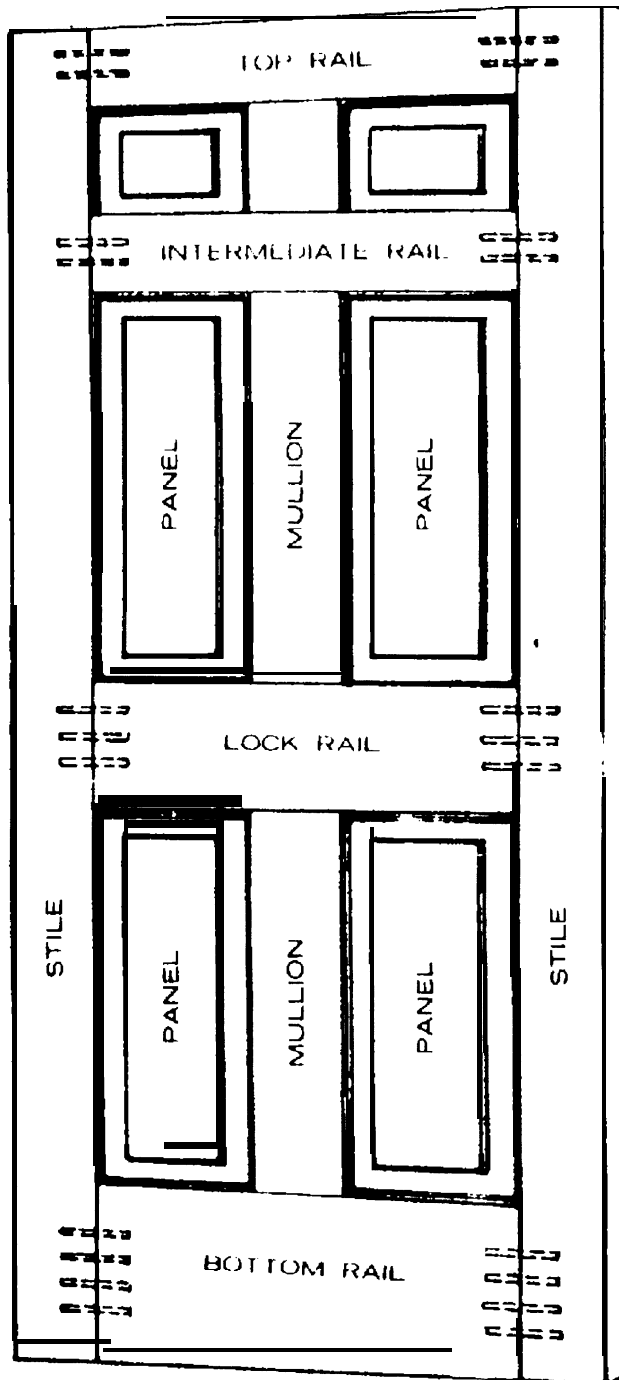
SECTION 11 : EXTERIOR DOORS

A. PURPOSE :

Exterior doors provide entry and exit from the unit. Doors can add or diminish cosmetic value and appeal of the unit, depending on their appearance. Security and energy efficiency are of paramount importance and are basic purposes of the exterior doors.

B. COMMON DEFECTS :

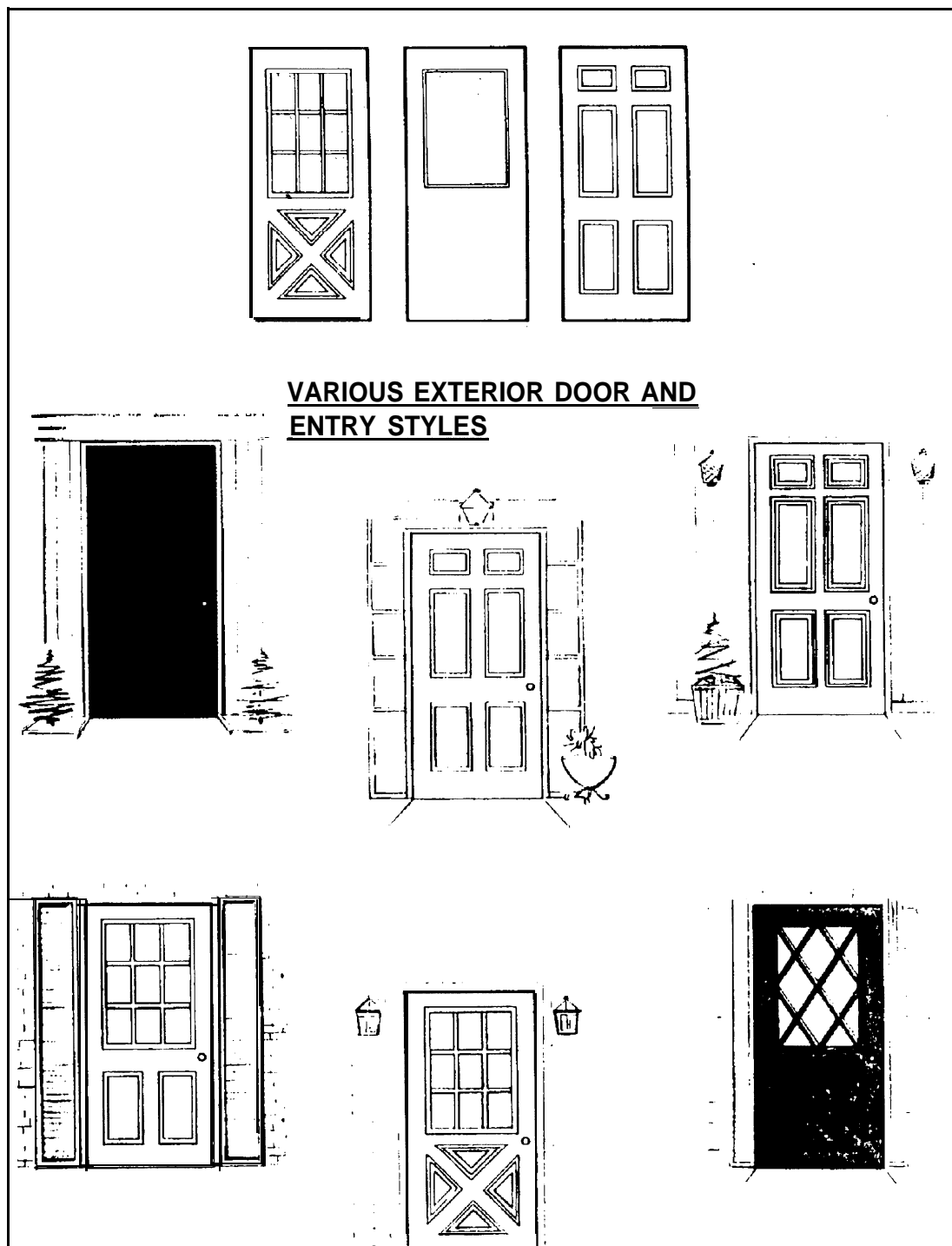
Defects in exterior doors can range from simple cosmetic painting repair to complete door unit replacement. Common defects include peeling or worn paint, dents and gouges in wood or metal doors, or visible rust on metal doors. Loose or squeaky hinges, inoperable or defective locks and hardware, and worn or missing weather-stripping indicate further evidences of common door defects. More severe defects include warping, rusting, rotting, or visible splits in the door material.



PARTS OF A STANDARD
SIX PANEL DOOR

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Doors that bind, stick, or have visible gaps between the frame and the door could indicate defects with the door unit or, possibly, with the building structure.



MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

C. INSPECTION PROCEDURE :

- a. Visually inspect doors noting all peeling, faded, or worn painted surfaces. Look for dents or gouges in the door material. Note the amount of visible surface rust found on metal doors. Give close attention to the lower half of the door.
- b. Open and close the door several times. Note the smoothness of operation. Note all binding or sticking. Listen for squeaky or binding hinges.
- c. Using the key, operate the lock set and/or dead-bolt. Ensure the locks are engaging and operating properly.
- d. Look and feel around door and frame to ensure weather-stripping is intact and not worn beyond serving its purpose.
- e. Inspect wooden doors for rotting or splitting, noting all visible defects.
- f. Inspect metal doors for severe rust. Rust is usually most severe along the lower edge and bottom half of the door.
- g. From the inside of the unit, with the door closed, look for outdoor light between the door and the frame. This light represents gaps that waste energy and could indicate a warped door unit or even serious foundation or structural problems in the unit.
- h. Inspect sliding glass doors, note all broken or cracked glass. Ensure door can be locked and that it slides open and closed smoothly.

D. RESULTS AND CORRECTIVE ACTION :

- a. Repair all cosmetic defects affecting the visual appearance of the door to include sanding, patching of gouges and scratches, repairing dents, and painting.
- b. Service and/or replace worn and rusted hinges.
- c. Replace or repair all defective security hardware immediately. Ensure all locksets and dead-bolts provide ample security protection.
- d. Replace weather-stripping as required to alleviate all wind drafts and water intrusion.
- e. Replace doors that have rotted or split to a point that light is visible through the door. The bottom edge of the door is prone to rot where it meets the threshold. Replace metal doors that have severe rust damage.
- f. Replace door units when gaps are visible between the door and the frame. Plane or replace door units that drag, bind and are difficult to open. These conditions may indicate foundation or structural problems in the unit. Replacing the door unit is a band-aid solution and will not address the real problem.

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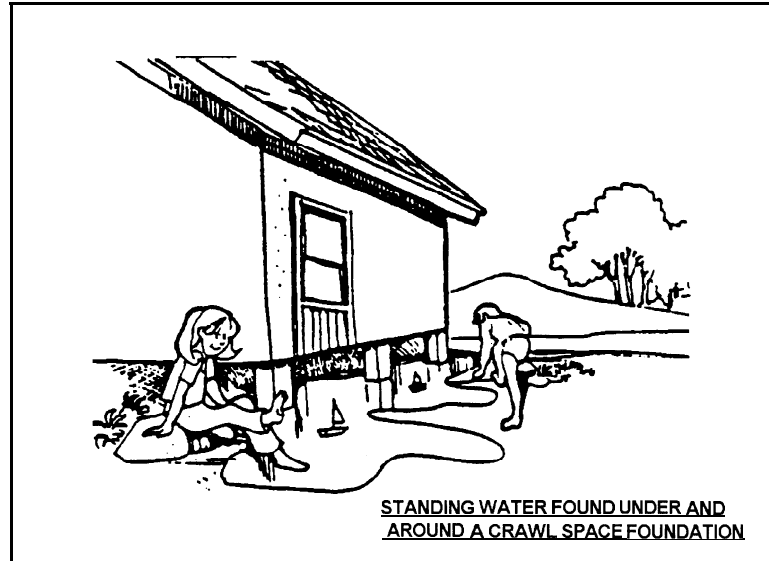
- g. Repair or replace sliding glass door units if they are difficult to open. Cleaning and lubricating the rollers and track will most often correct this problem. Take action to ensure the sliding panel can be secured to prevent unauthorized entry.
- h. Most door repairs can be completed at the unit level. Contact your CEU if foundation or structural problems are suspected. Initiate SSMR's if the scope or quantity of repairs and replacements required is beyond the unit level capability.

FOR MORE INFORMATION SEE PAGES 232-235, 298-299, 302-304, 308-311 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 12 : GRADING AND SITE DRAINAGE

A. PURPOSE :

Proper grading or sloping of the soil surfaces surrounding the perimeter of a unit foundation is needed to provide appropriate site drainage. Good drainage is necessary to avoid foundation failures. The primary purpose of proper grading and drainage is to avoid future problems with standing water or erosion. Landscaping efforts will also be affected by the quality of the site drainage conditions.



B. COMMON DEFECTS :

Several defects can be noted by observing the lawn area surrounding a housing unit. Inadequate slope or slope toward the building will allow water to puddle or stand. Water running off a roof when gutters are not present can cause a dam to form around the perimeter of the structure. This causes water to be trapped and puddle next to the foundation. Improper landscaping material installations or raised flower and shrub beds located around the unit can trap water and prevent adequate drainage. All of these conditions will allow or cause:

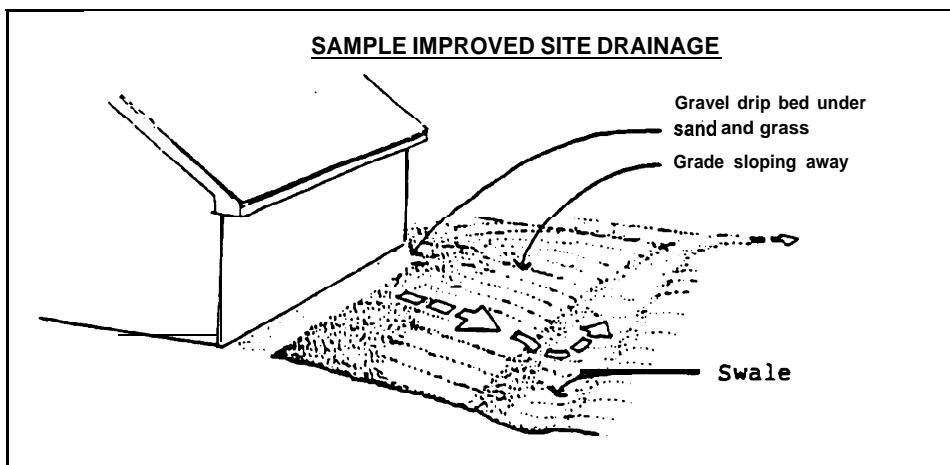
- ▶ excessive moisture to appear on interior basement foundation walls,
- ▶ puddles or standing water under crawl-space foundations,
- ▶ uneven settling or cracking of slab on grade foundations.

On the other extreme, excessive slope can cause erosion of the soil surfaces. Erosion can lead to the undermining and failure of the foundation, driveways and sidewalks. Inadequate or excessive sloping and grading will stifle landscaping efforts resulting in poor, insufficient amounts of a ground cover such as grass.

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C. INSPECTION PROCEDURE :

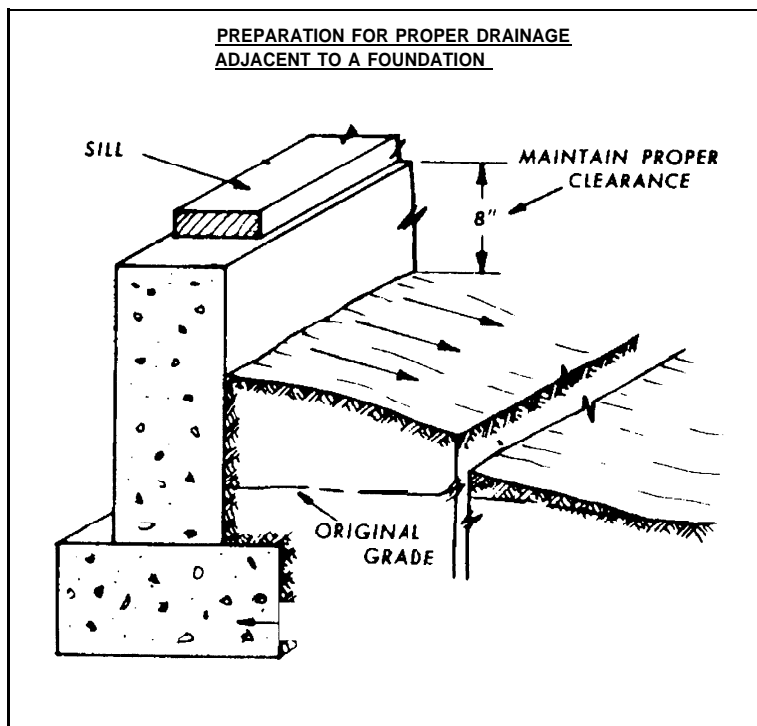
- a. Walk around the perimeter of the unit, visually sighting the overall slope of the surface surrounding the unit. The general rule of thumb says the surface should slope away from the foundation at the rate of one inch per foot for a minimum of ten feet.



- b. Look for areas of isolated puddling or erosion. These may be evidenced by dead grass, bare spots, or visible signs of erosion. Pay close attention to areas behind flower beds, shrubs, under downspouts and next to the foundation.
- c. Visually inspect under crawl space foundations for standing water. If present, determine if it is from inadequate site drainage or possibly a plumbing leak.

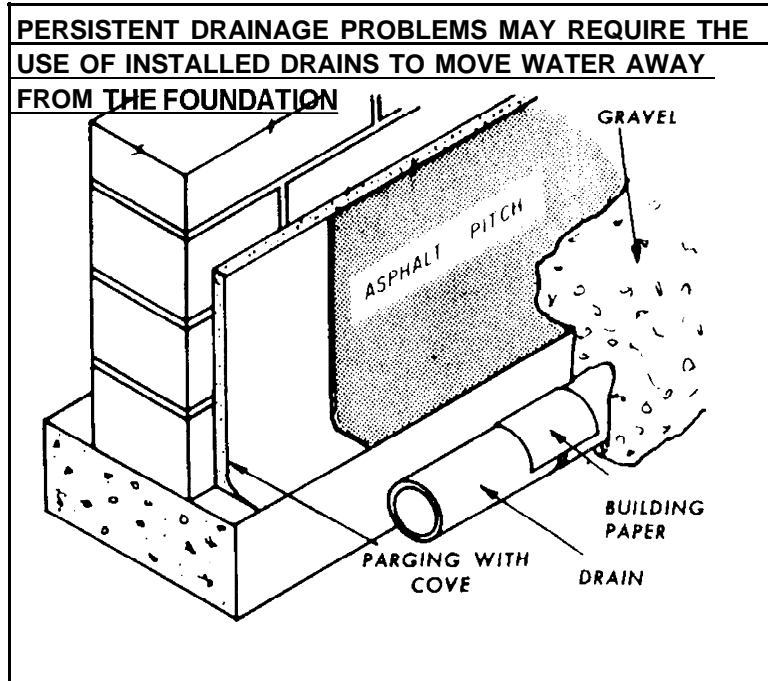
D. RESULTS AND CORRECTIVE ACTION :

- a. Repair and grade all areas where water is puddling



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- or standing in close proximity to the foundation.
- b. Introduce fill dirt and top soil to alleviate excessive slope and erosion.
 - c. Install guttering and downspouts to alleviate erosion occurring against the foundation wall.
 - d. Spot fill isolated areas of puddling or erosion to enhance the landscaping program.
 - e. In cases where earth moving is not possible, the installation of area or french drains may be required to correct drainage problems.
 - f. It is essential to correct or document all drainage problems. Failure to do so will result in increasing moisture related problems, especially in the case of basement foundations. Foundation failure will be the eventual result if no action is taken.



FOR MORE INFORMATION SEE PAGES 314-315 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

SECTION 13 : LANDSCAPING

A. PURPOSE :

Landscaping provides functional and aesthetic value to a housing site. Facility managers, maintenance personnel and tenants routinely overlook many of the functional benefits of a comprehensive landscaping plan. Good landscaping stabilizes the topsoil and prevents erosion, slows down wear and tear on interior floor finishes by reducing the amount of sand and dirt tracked into the unit, and increases occupant pride in the housing site. A well-established landscaping program can even aid in energy conservation and cost. Trees and shrubs can provide a windbreak in cold weather and provide shading of the unit during the summer months. Shrubs can also provide a level of privacy and security around ground level windows. Aesthetically, a comprehensive landscaping plan gives eye appeal to a unit or community.

B. COMMON DEFECTS :

The most common defect found with landscaping in Coast Guard housing sites is the absence of an overall community landscaping plan. Care, planting and installation of landscaping materials, flowers, shrubs and trees should be part of the scheduled maintenance program. More often, this task is left to a few residents of the community who provide care only for those plants located in the boundaries of their own yard. This practice results in decent landscaping around some units while compounding the poor appearance of the remaining units. Many times well intentioned residents cause standing water problems to occur around foundations due to an inadequate understanding of landscaping practices. Other defects found with landscaping is the choice of inappropriate or high maintenance species of plants and shrubs selected for planting or planted in the wrong place. Trees and shrubs planted too close to the unit can cause damage from the roots and promote mold and rot if they block the amount of air circulation and sunlight reaching the exterior walls.

C. INSPECTION PROCEDURE :

- a. Objectively view the housing site, assessing the uniformity and quantity of landscaping. Note the existence or absence of an overall landscaping plan. This would include scheduled care consisting of watering, fertilizing, and pruning as well as a systematic planting program.
- b. Look for areas of erosion, standing water, or bare spots in

- c. Check for planting boxes or flower beds that may be preventing the proper drainage of water away from the building foundation.
- d. Look for trees or shrubs growing too close to the unit. If a person cannot walk between the shrub and the unit, it is too close.
- e. Determine if any tree or shrubbery roots are causing problems with sanitary drains or drain fields.

- Commitment of Housing Manager and staff to have a nicely landscaped project.
- Professional landscape design.
- Scheduled cart on periodic basis.
- Prompt attention to problems.
- Follow-through on all requirements.

[illegible]

Improve attitude of occupants toward project.

- 49

D. RESULTS AND CORRECTIVE ACTION :

- a. To begin a comprehensive landscape program, it is best to obtain the services of a local, reputable landscape designer. Landscaping programs can be implemented in phases, according to a master plan. This approach is compatible with our budget process.
- b. When considering a landscape program give greater emphasis to the functional values of good landscaping. The aesthetic values will become self-evident.
- c. Select plant varieties based on their ability to meet the functional requirements and thrive in the local soil and climate conditions. Avoid plants requiring frequent care.
- d. Your local county agent or soil conservation service field office can provide extensive information in the area of plant and lawn care.
- e. Trim or remove all shrubs and trees causing structural damage to a unit or building.
- f. Remove all planting beds or landscaping materials that interfere with proper site drainage.

SECTION 14 : PARKING PADS

A. PURPOSE :

Parking spaces should be provided at the rate of two spaces per unit of housing. Parking pads, garages and carports are considered when totalling parking spaces. The purpose is to provide designated off-street, off-the-lawn parking. Concrete is the material of choice to be used for parking pads. Parking pads provide a systematic approach to parking while protecting the landscaping efforts in the community.



**PARKING PADS SHOULD BE INSTALLED
TO ALLEVIATE ON STREET PARKING**

B. COMMON DEFECTS :

The most common defect is the absence of sufficient parking pads and spaces. Cars parked on the grass and on the street provide indications of poorly planned parking locations or an insufficient quantity of spaces. Deteriorating asphalt and cracked, spalled, or flaking concrete are further defects associated with parking pads.

C. INSPECTION PROCEDURE :

- a. Count the number of off-street parking spaces provided for each housing unit. Each unit should be provided two spaces.
- b. Look for areas where cars are or have been parked on the lawn.
- c. Inspect existing concrete parking pads for cracking, spalling, or flaking.
- d. Inspect asphalt pads for signs of deterioration or cracking.

D. RESULTS AND CORRECTIVE ACTION :

- a. Install or submit SSMR's to install parking pads to reach a ratio of two per unit. New parking pads should be poured concrete with metal reinforcement.
- b. Repair or replace existing cracked, spalled, or flaking parking pads.
- c. Consider replacing asphalt pads with concrete if the asphalt is deteriorating.

SECTION 15 : SUBFLOORING

A. PURPOSE :

Subflooring is generally found in buildings with basement and crawl space foundations and on upper story floors when wooden floor framing is used. Subflooring provides strength to the individual floor joists. Subflooring evenly distributes weight loads to the floor joist. In most cases; the finish floor covering is applied over the subflooring material. If plank subflooring is used, a plywood, particle board, or masonite underlayment will be installed to receive square tile or sheet goods.

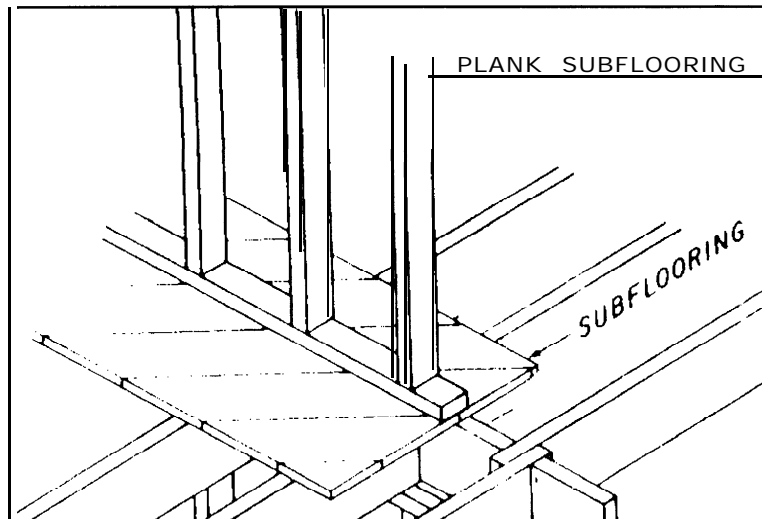
B. TYPES :

- a. Plywood
- b. Wood Planks
- c. Particle board

C. COMMON DEFECTS :

The most common defects found in subflooring will be caused by exposure to excess moisture. This will result in rotting, warping or sagging.

Termite or insect damage can also be found, especially in crawl space foundations. Termite damage will cause the subfloor to weaken, sag and even give way if left untreated. The very annoying defect of squeaking and creaking subflooring can be caused by insufficient nailing during original construction or may be a signal of the defects noted above. Subflooring located in kitchens and bathrooms is vulnerable to rot, especially around showers, bathtubs, and toilets. Using particle board for subflooring is strongly discouraged. It should never be used in kitchens and bathrooms.

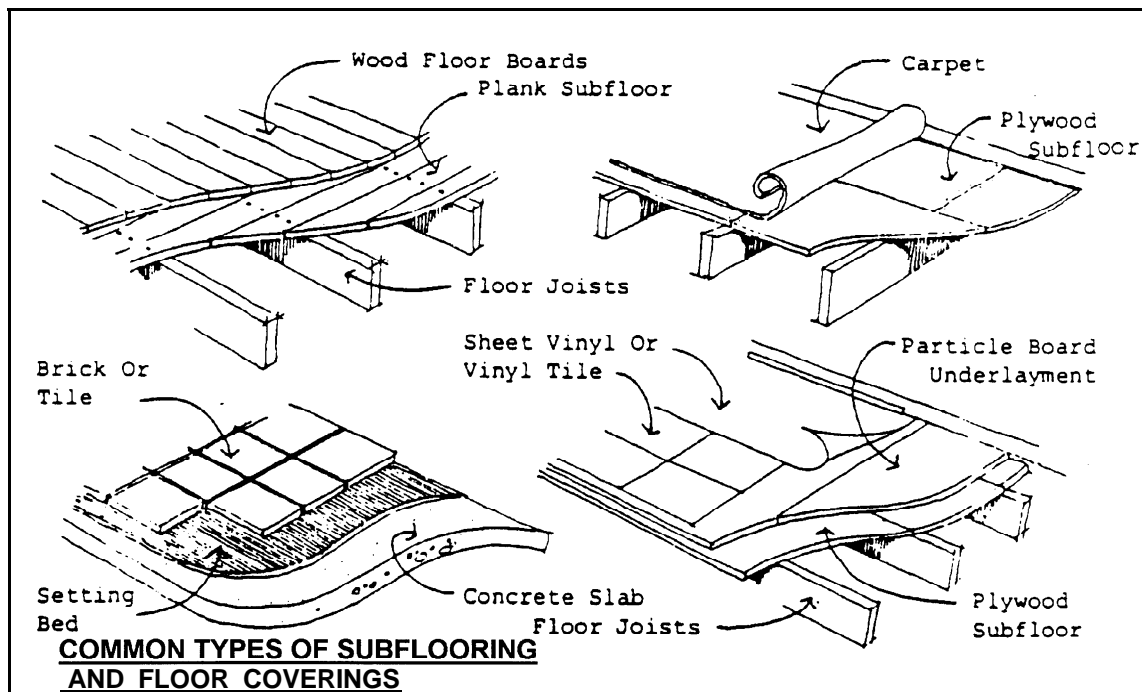


D. INSPECTION PROCEDURE :

- a. Determine subfloor material. In the case of crawlspace and basement foundations, a visual inspection from the underside is often the best way to determine the material used.

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- b. Walk across the floor in several rooms. Note any audible squeaks. Feel for any bounce or soft spots noticeable as you walk.
- c. Visually inspect the subfloor from the underside, when possible, for any signs of termite or insect infestation.
- d. Look for uneven or excessive gaps between floor tile. This condition often results from a warped subfloor.
- e. Check the condition of the subflooring located next to showers, bathtubs and toilets. Rot is usually prevalent in these areas.
- f. Check the surface of the finish flooring. Note all dips, bulges or surface irregularities that could be caused by damaged subflooring.



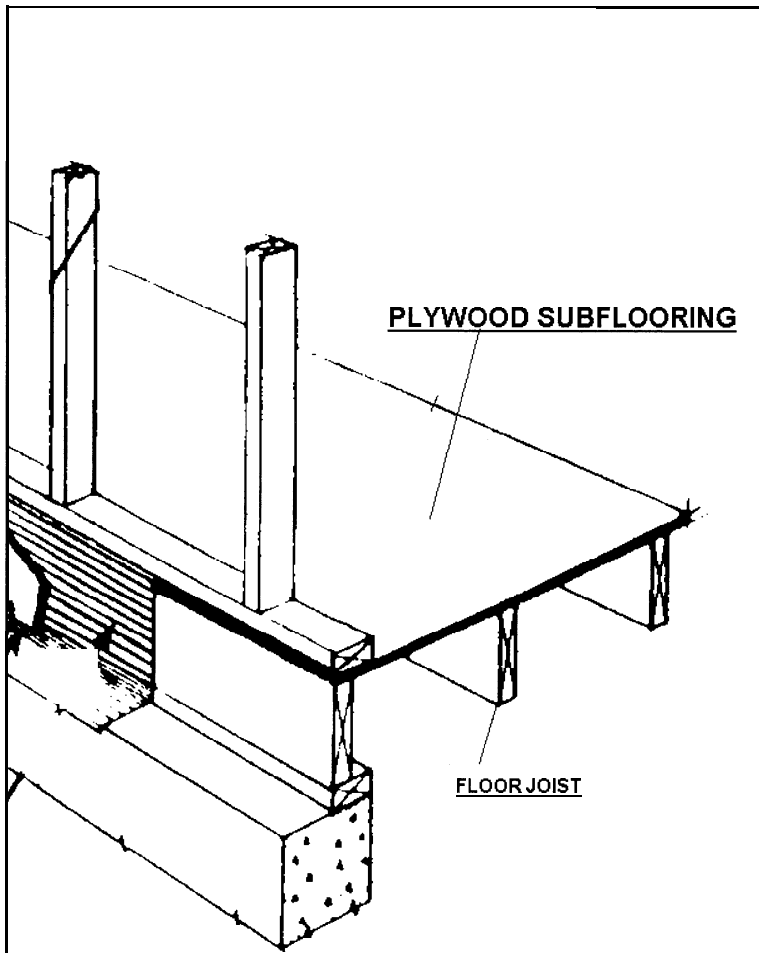
E. RESULTS AND CORRECTIVE ACTION :

- a. Discoveries of termite or insect infestation must be treated by a professional pest control company immediately. Inspect the subfloor and adjacent structural members for damage. Sections of flooring have been known to collapse due to termite damage.
- b. Replace sagging, rotted, or soft areas of subflooring to alleviate tripping hazards.
- c. When rot is discovered in the subflooring, determine the source of moisture causing the rot and replace the affected area. Allowing moisture and rot to continue will lead to

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further damage affecting the structural floor framing members. Bathtubs and toilets have been known to fall through the floor in Coast Guard housing because rotten subflooring was not replaced.

- e. The complexity of subfloor replacement usually depends on the amount or area of flooring affected. SSMR's should be submitted when the complexity is beyond local unit capability.



**FOR MORE INFORMATION SEE PAGES 119,121,124 IN THE STANLEY
COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND
IMPROVEMENT**

SECTION 16 : FLOOR COVERINGS

A. PURPOSE :

Floor coverings serve both functional and cosmetic purposes. In kitchens and baths they provide a waterproof barrier to protect the subfloor from moisture damage and rot. In other areas of the house they serve as an attractive, decorative covering to hide the subfloor or concrete. Floor coverings should be safe, durable and easy to maintain. Floor coverings also have insulating values that vary according to type.

B. TYPES :

- a. Carpet
- b. Vinyl composition tile
- c. Wood (planking or parquet)
- d. Linoleum (sheet goods)
- e. Glazed ceramic tile
- f. Quarry tile

C. COMMON DEFECTS :

There are a multitude of defects associated with floor coverings. Each type has a unique list of possible defects. The main idea is that, regardless of the type of floor covering, it should have a clean, uniform appearance free of visual surface irregularities. Stained or torn carpet, cracked or missing ceramic tile, mismatched or broken vinyl tile and curling or torn linoleum clearly illustrate some of the most common defects. Scratched or marred wooden flooring further illustrate common defects. In kitchens and baths, it is possible for the floor covering to be in good shape but the floor surface may have bulges due to warped or swollen subflooring. In this case, both would require replacement. Certain linoleum products may have blue or purple stains visible when it is not rated as suitable for wet areas.

D. INSPECTION PROCEDURE :

- a. Determine the types of floor coverings installed in the unit.
- b. Inspect carpeted areas. Look for signs of excessive wear, visible traffic patterns, stains, frayed fiber, visible backing, and foul odor. All represent sufficient justification for replacement. Carpets should also be

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adequately stretched to avoid all visible wrinkles. Carpet requires the highest level of occupant and facilities management maintenance and has the lowest average life span of any floor covering.

- c. Inspect vinyl composition tiles. Look for stained, gouged, cracked, missing, or mismatched colors and patterns of square tile. Ensure tiles are securely bonded to the subfloor. Loose tiles are to blame for many tripping accidents.
- d. Inspect wooden flooring. visible defects would consist of dull, scratched or gouged surface. Stains, mold or mildew might be evident in wood floors. More serious defects might be exposed or protruding nail heads, loose or split boards. Even rot is sometimes found in wood flooring. Always inspect wood flooring for evidence of termite or insect infestation.
- e. Inspect linoleum flooring (sheet vinyl). This type of floor covering is most popular in kitchens and baths. The most obvious defect you will see is curling at edges and seams. This is caused by water penetration at improperly sealed edges and seams. You will often find this occurring next to the bathtub or shower. Other defects in linoleum most likely to be visible will be stains and discoloration, tears and gouges, or traffic patterns in the surface texture. Bubbles or bulges may appear between the linoleum and the subfloor if the adhesive is inadequate or has deteriorated.
- f. Inspect ceramic tile floor covering. The primary defects will be cracked, missing, mismatched or loose tiles. Other defects could be molded, loose or missing grout between the tiles. When ceramic tile is installed over a wood subfloor it is imperative to prevent water from penetrating through the tile or grout. Swelling or rotten subflooring will cause ceramic tile to crack or become loose.
- g. Quarry tile is not widely used in Coast Guard housing. In cases where it does exist, the defects for the most part will be similar to those found in ceramic tile.

E. RESULTS AND CORRECTIVE ACTION :

- a. Document the current condition of the carpeted areas in the unit. Determine if replacement is required. Considering the cost versus the life span of carpet, determine whether another type of floor covering would be a better suited replacement.

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⇒ **NOTE**

CARPET REQUIRES THE HIGHEST LEVEL OF OCCUPANT AND MANAGEMENT MAINTENANCE AND HAS THE LOWEST AVERAGE LIFE SPAN OF ANY FLOOR COVERING. CONSIDER THIS WHEN SELECTING FLOOR COVERINGS.-

- b. Document condition of vinyl composition tile and other composition tiles located within the unit. Replace all broken, chipped or damaged tiles. Consider replacing the entire room if tiles are of dissimilar patterns and colors. Ensure no tripping hazards exist in the form of loose tiles.

⇒ **NOTE**

CAUTION! Some older tiles appearing to be vinyl composition may in fact be vinyl asbestos. Do not remove or disturb any tiles without determining the presence or absence of asbestos with an analysis conducted by your CEU.

If the existing tile contains asbestos but is securely bonded to the subfloor, the preferred resolution is to install new tile over the existing. This method will encapsulate the asbestos. If removal is required, consult your CEU for assistance.

- c. Document condition of wood flooring. If sufficient thickness remains, refinish wood floors to restore dull or scratched surfaces. Replace wood flooring if nail heads are protruding above the finished surface or if successive refinishing operations have diminished the material to a point at which refinishing is no longer possible. Repair or replace areas affected by rot. Prior to repair or replacement, determine the cause of the rot or water damage. Repair or replace areas found to be damaged by termite or insect infestation. Contact a professional pest control company to determine if infestation is active. Treat immediately.
- d. Document condition of linoleum floor coverings. Replace linoleum floor coverings if excessive wear is evident. Replacement is often required if curling is evident at seams and corners. Attempts to reglue these areas usually prove futile.
- e. Document condition of ceramic and quarry tile floor coverings. Replace all broken and loose tiles. If the floor surface has bulges or a wavy appearance, check the condition of the subfloor. Replace grout if necessary. Ensure the ceramic tile floor is not allowing water to penetrate and

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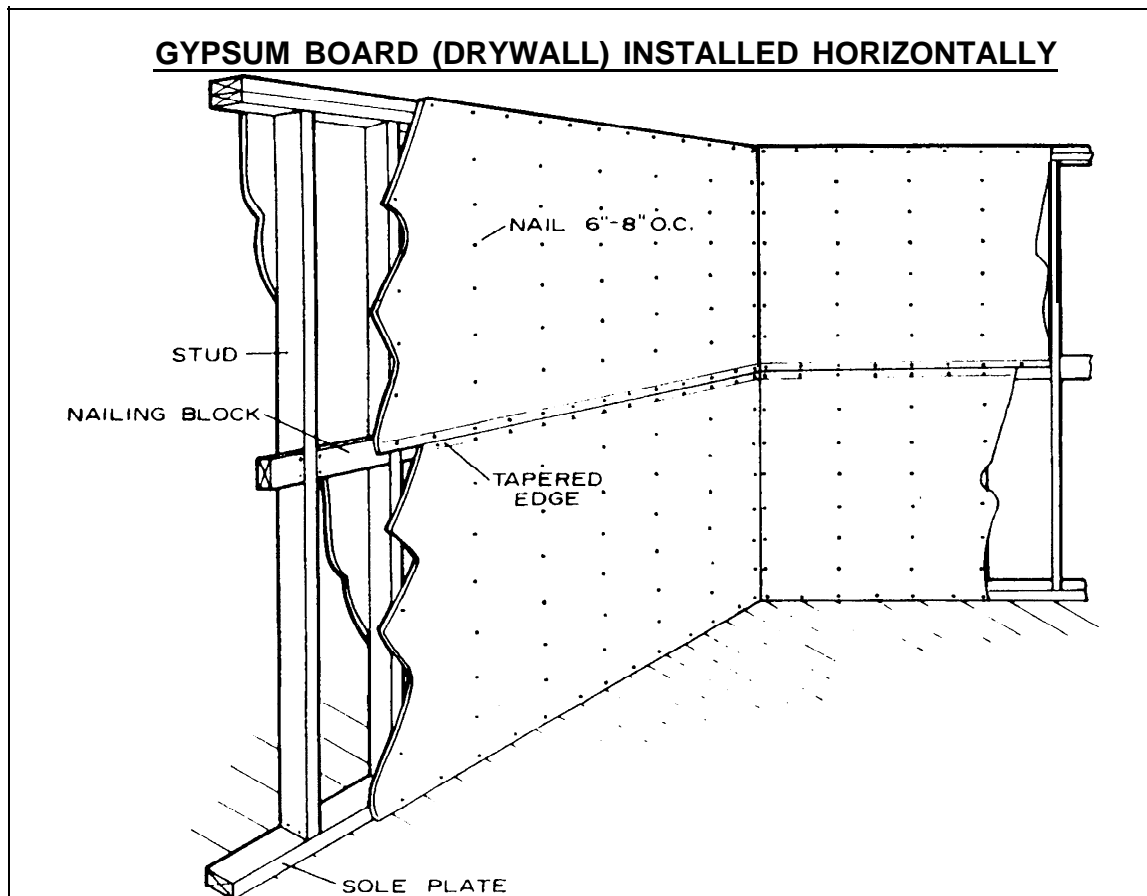
- damage the subfloor.
- f. All defects in floor coverings should be repaired at the local unit level unless the scope of work will exceed funding or manpower limitations or involve hazardous waste removal. In this case, document requirements and submit them using SSMR's.

FOR MORE INFORMATION SEE PAGES 119-143 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 17 : WALLS AND WALL COVERINGS

A. PURPOSE :

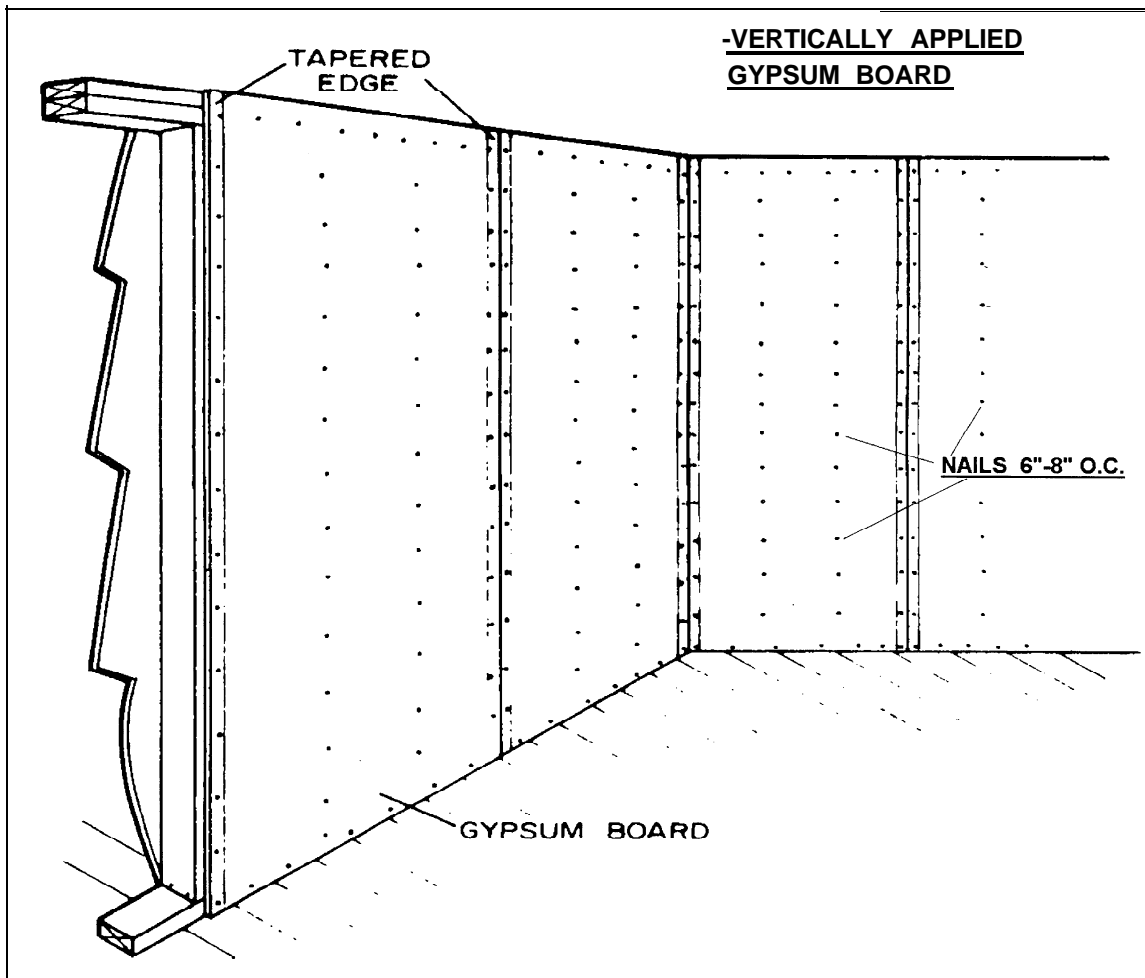
Interior walls serve two major functions and several more general purposes. Walls provide the logical, functional layout of the interior spaces of the house, most often referred to as the floorplan. Some interior walls will also provide structural support to the unit. These are called load-bearing walls. Non-load-bearing walls are often called partition walls. Partition walls can be altered, moved or removed with little difficulty to improve the layout of the unit. Load-bearing walls require extensive engineering efforts to alter, move or remove and are in most cases considered to be permanent. Interior walls also provide fire and sound resistance. Wall coverings are used for cosmetic purposes and come in a variety of types. Paint, wallpaper, paneling, fabric, and wood planking represent a sampling of various wall coverings found in Coast Guard housing.



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B. COMMON DEFECTS :

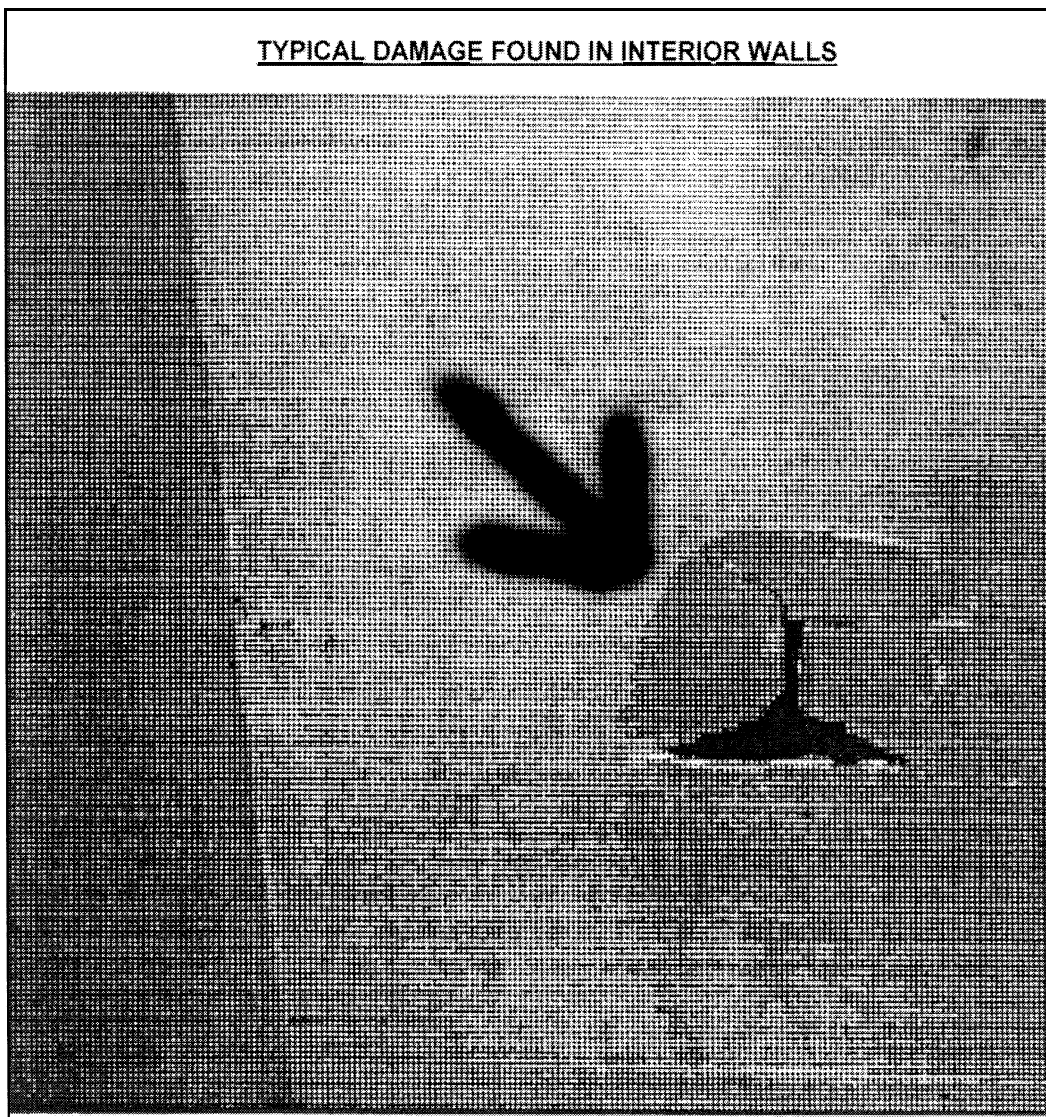
The most common defects found with interior walls are the holes, gouges, cracks and peeling or flaking paint associated with normal wear and tear. This is not to imply that these defects should be overlooked. These normal wear and tear defects when left unrepaired have an adverse effect on the overall appearance of the unit. When wallpaper is used, it may be found with holes, tears or it may be peeling away from the wall due to excess moisture or failed adhesive. More serious defects will include crumbling or deteriorated drywall under window sills, cracking plaster, or walls that have separated from floors or ceilings caused by uneven settling of the foundation. In some cases, entire walls may need to be removed or relocated to enhance the floorplan of the unit.



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C. INSPECTION PROCEDURE :

- a. Inspect all walls for the presence of holes, gouges or cracks.
- b. Note the overall condition of the paint throughout the unit. Note all areas where excessive peeling, cracking or flaking is present. Determine if excessive paint build up is present. If paint build up is excessive, paint will continue to flake until the excess is chemically or manually removed.
- c. If wallpaper is used, check for holes and tears. Look for areas where the wallpaper is peeling from the wall.



- d. Look under and around windows for water damage. The condensation from windows will often cause deterioration of

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- the drywall around windows.
- e. Look for cracks or signs of separation at the intersection of walls and ceilings or walls and floors. This could indicate a more serious condition with the unit foundation.
- f. Take an objective look at the floorplan or layout of the unit. Within the confines of the exterior walls and in consideration of the load bearing walls located within the unit, determine if the habitability of the unit would be enhanced by removing or relocating partition walls located within the unit. This may even result in the relocation of various rooms to accommodate today's modern family.

D. RESULTS AND CORRECTIVE ACTION :

- a. Repair all holes, gouges or cracks. Before repairing, determine the origin of the damage to determine if it is recurring damage indicating a possible structural defect with the unit.
- b. Sand, repair and repaint areas of flaking or peeling paint. If the layers of paint have accumulated to a point where good adhesion is no longer possible or a smooth finish is unattainable, it may be necessary to chemically or physically remove the excess layers of old paint. Applying new layers of paint over excess paint will only result in continued peeling and flaking due to uneven expansion and contraction between the different types and ages of paint layers.

⇒ WARNING

Many older units of Coast Guard housing may have paint containing high levels of lead. Lead has been proven to be a major health risk for children and expectant mothers. Before sanding, scrapping or removing any paint, you should ask your CEU to test for lead content. Flaking paint must be encapsulated to prevent accidental ingestion by children until the test can be performed.

- c. Replace wallpaper having tears or numerous holes. Because of the high turnover rate in CG housing, wallpaper is not highly recommended. Loose wallpaper can be reapplied to the wall with new adhesive.
- d. Water damage or deteriorated drywall under and around windows should be repaired promptly. Failure to respond to water damage could result in rot or deterioration of structural members located within the exterior wall.
- e. Cracks or signs of separation between walls and floors or

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- walls and ceilings should be investigated fully to determine if foundation settling or failure is to blame.
- f. Prepare **SSMR's** to relocate or remove existing walls to enhance the liveability of the unit. Keep in mind it's okay to visualize and even dream about what the unit could look like upon completion of your idea. Seek engineering assistance from your **CEU** if you have questions regarding load bearing walls. It is not impossible to move load bearing walls.

**FOR MORE INFORMATION SEE PAGES 146-169,190-198 IN THE
STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND
IMPROVEMENT**

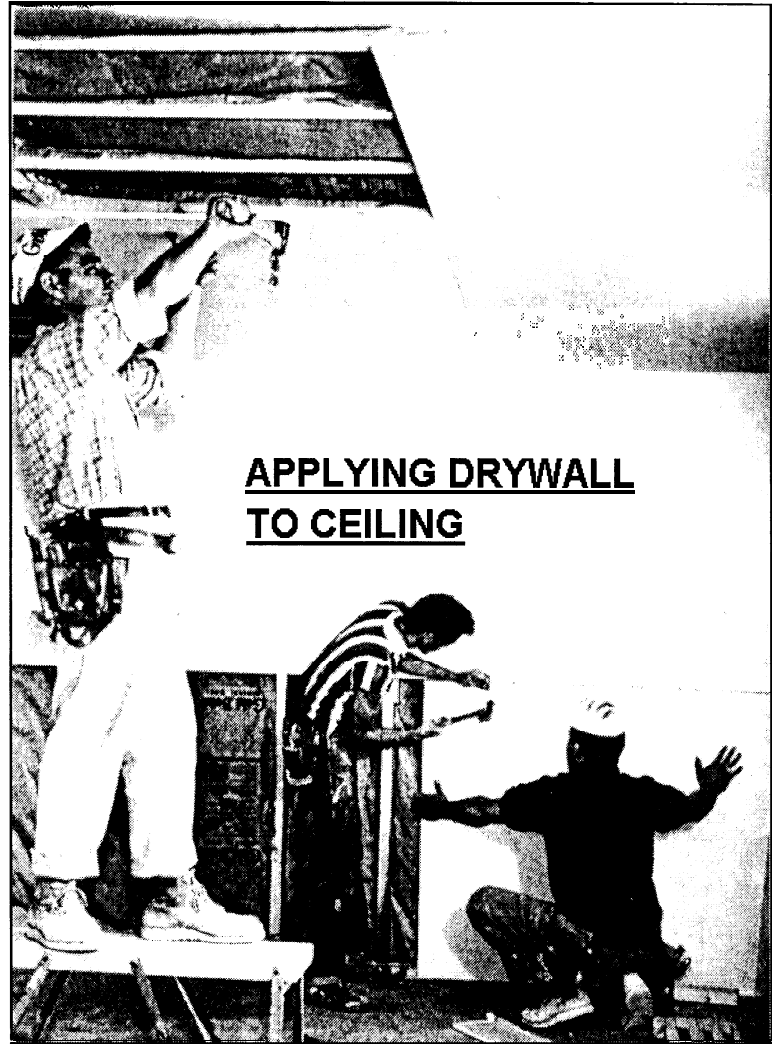
SECTION 18 : CEILINGS

A. PURPOSE :

Ceilings, like walls, enclose spaces within the unit. They also aid in limiting sound transmission between units. Depending on the ceiling type, some increased thermal insulation protection is provided.

B. COMMON DEFECTS :

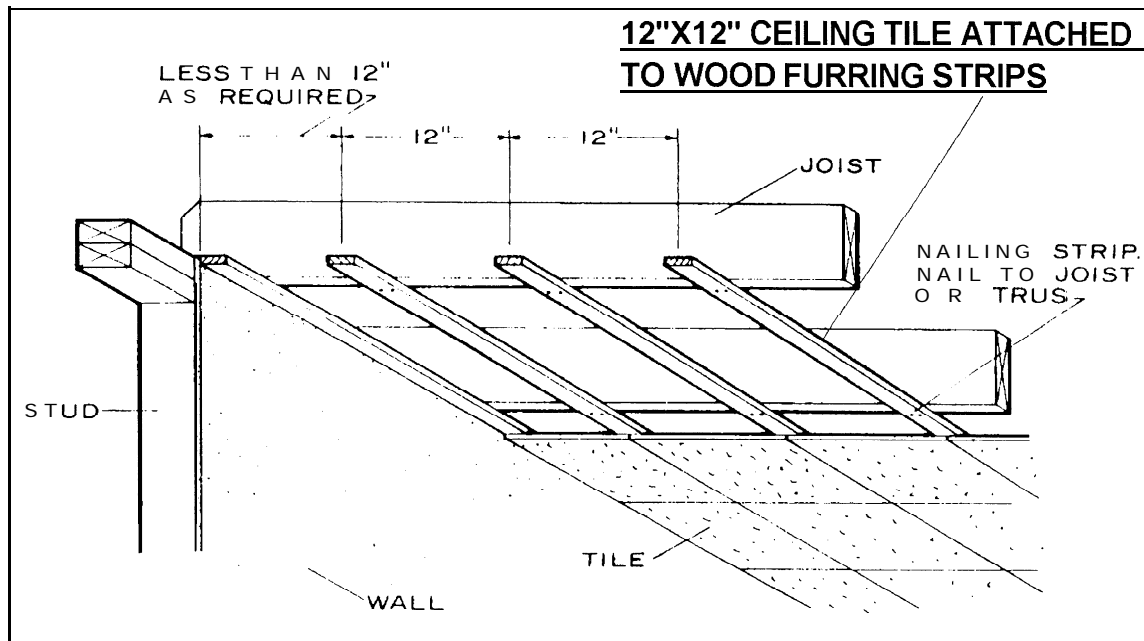
Most ceilings found in Coast Guard housing will be drywall with either hand-applied or blown-on acoustic texture. The most common defects with drywall ceilings will be visible water damage or problems with peeling or flaking paint caused by excess paint build up. Blown-on acoustic textures should be avoided in kitchens and baths. Suspended ceilings are used in some units for various reasons. There is nothing wrong with using this type of ceiling but it is not highly recommended. When suspended ceilings are used in damp areas like kitchens and baths, the metal grid will often develop rust or corrosion. Direct applied ceiling tiles (usually 12"x 12") are sometimes found in older housing. The most common damage associated with these tiles are water damage and sagging or missing tiles. Water stains on the ceiling are usually the sign of a leak in the roof system and flashings or in the plumbing system.



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C. INSPECTION PROCEDURE :

- a. Inspect all ceilings for the presence of holes, gouges, cracks or signs of water damage throughout the unit.
- b. Look for peeling or flaking paint on all ceilings.
Determine if excessive paint build up is present and contributing to the problem.



- c. If blown-on acoustical texture is used, ensure that it is intact and not flaking off and falling into the living spaces within the unit.
- d. Inspect suspended ceilings, noting all damaged panels or rusted and corroded metal grid.
- e. Inspect all direct applied ceiling tiles for damage, loose tiles or signs of water damage.

D. RESULTS AND CORRECTIVE ACTION :

- a. Patch and repair all holes, gouges and cracks found in the ceilings.
- b. Cracks could be evidence of foundation failure. If they continue to reappear, a final determination should be made to eliminate the possibility of structural problems.
- c. If flaking or peeling paint due to excessive layers is a problem, chemical or physical removal of excess paint should be performed to eliminate the future continuing problem.
- d. Remove or repair flaking acoustical material.

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⇒ NOTE

MANY BLOWN-ON ACOUSTICAL MATERIALS CONTAIN ASBESTOS. BEFORE REMOVING, CONSULT CEU FOR DETERMINATION OF MATERIAL AND PROCEDURES REQUIRED IF ASBESTOS IS FOUND.

- e. If water damage is found on the ceiling, determine the origin and repair first; then repair the ceiling.
- f. Replace or repair all defective suspended ceiling systems found to contain damaged panels or metal grids.
- g. Direct-applied tiles should be removed or replaced if they are found damaged, stained, loose or otherwise unattractive.
- h. If drywall ceilings are found sagging, consult professional engineering assistance to determine if ceiling joists are warped or damaged.
- i. Initiate SSMR's or perform necessary work at the unit level to ensure ceilings are free from visual defects and present an attractive visual appearance.



**SUSPENDED ACOUSTICAL TILE
USED FOR CEILING**

**FOR MORE INFORMATION SEE PAGES 157,170-182,186-187,199 IN
THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR
AND IMPROVEMENT**

SECTION 19 : BATHROOMS

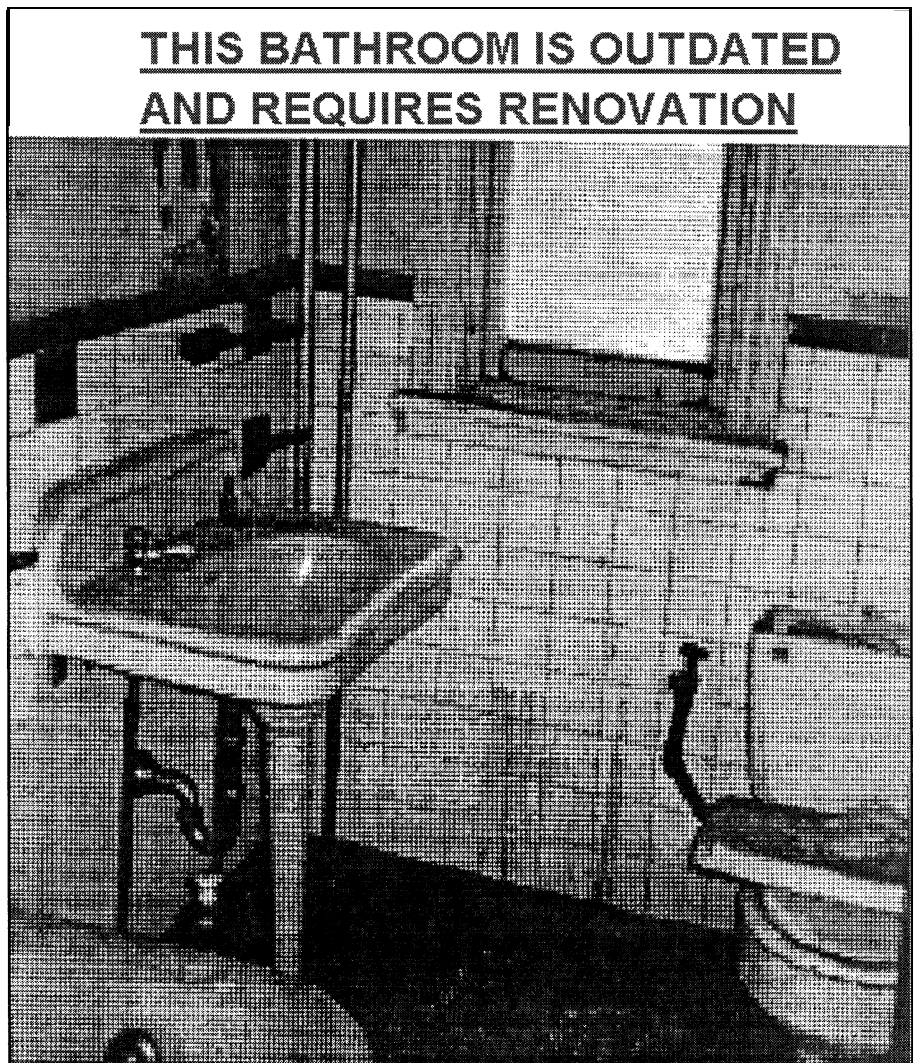
A : PURPOSE

The bathroom is the central point for family personal hygiene and sanitation.

B. COMMON DEFECTS :

Numerous defects can be found in bathrooms. They may involve age, poor layout, defective fixtures, lack of ventilation, electrical outlets not protected by GFI's (ground fault interrupters) or inadequate storage for medicines or personal hygiene supplies. Defects associated with floors, ceilings and walls are covered in those respective sections. A poor visual appearance may be attributed to antiquated fixtures, vanities, or rusted medicine cabinets. Tub and shower doors may be cracked, damaged or difficult to close. Caulking may be

insufficient, missing or severely soiled around tubs, showers and vanities. Faucets and bathroom accessories may be missing chrome finish, corroded, difficult to operate or leak. Toilet seats may be cracked or loose. Vanity countertops may be in poor condition due to continual exposure to water.



MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

C. INSPECTION PROCEDURE

- a. Inspect walls, floors, and ceilings per guidance established in other sections.
- b. Compare current bathroom condition and layout against comparable bathrooms found in the private sector. Determine if an upgrade should be performed. Consider appearance in this assessment.
- c. Identify source of ventilation. An operable window or mechanical exhaust fan should be present.
- d. Identify presence or absence of **GFI** outlets in bathroom.
- e. Ensure adequate storage space is available for medicines, toiletries, and linens. Older bathrooms often will have **wallhung** or pedestal lavatories which provide no **useable** storage space.
- f. Operate tub and shower enclosures to ensure proper operation in preventing water from splashing or running onto the floor. Ensure curtain rods are properly located to prevent similar splashing or spillover.
- g. Check for missing caulking that may allow water to seep into floors and walls. Note general appearance and condition of caulking.
- h. Inspect condition and operation of faucets and other bathroom accessories. Note discrepancies in operation, signs of corrosion, and excess wear and tear.
- i. Inspect condition of countertops and vanity. Note all swelling and splitting of wooden components.

D. RESULTS AND CORRECTIVE ACTION

- a. Repair or replace ceilings, walls or floors with defects noted that affect habitability and appearance of the bathroom. Defects found that would allow moisture or water to penetrate into structural components should be repaired immediately to avoid serious damage.
- b. If bathroom fixtures and layout are outdated, submit **SSMR's** to **rehab** and upgrade bathroom to current standards.
- c. If no source of ventilation is identified, determine best solution to ensure a source of ventilation is provided.
- d. Ensure **GFI** outlets are installed and are operable.
- e. Replace pedestal or **wallhung** lavatories with vanity type sinks to provide storage space.
- f. Install linen closets and medicine cabinets as required.
- g. Replace rusted medicine cabinets.
- h. Repair or replace tub and shower doors that are cracked or fail to contain water within the enclosure.
- i. Refinish or install inserts in tubs that are rusted, chipped or otherwise unsightly.

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- j. Remove and replace old caulking that is mildewed, cracked or deteriorated.
- k. Replace faucets and other bathroom accessories that are corroded, old or difficult to operate.
- l. Replace all vanities, countertops, or cabinets if the wooden components are swollen, warped, split or delaminated. The use of particle board is strongly discouraged in bathrooms.
- m. All replacement commodes must be of the water saver type using no more than 1.6 gallons of water per flush.
- n. All replacement shower heads must be designated as a water saver.

**FOR MORE INFORMATION SEE PAGES 137,164-167,393,395-400
402-404,448-449 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK
OF HOME REPAIR AND IMPROVEMENT**

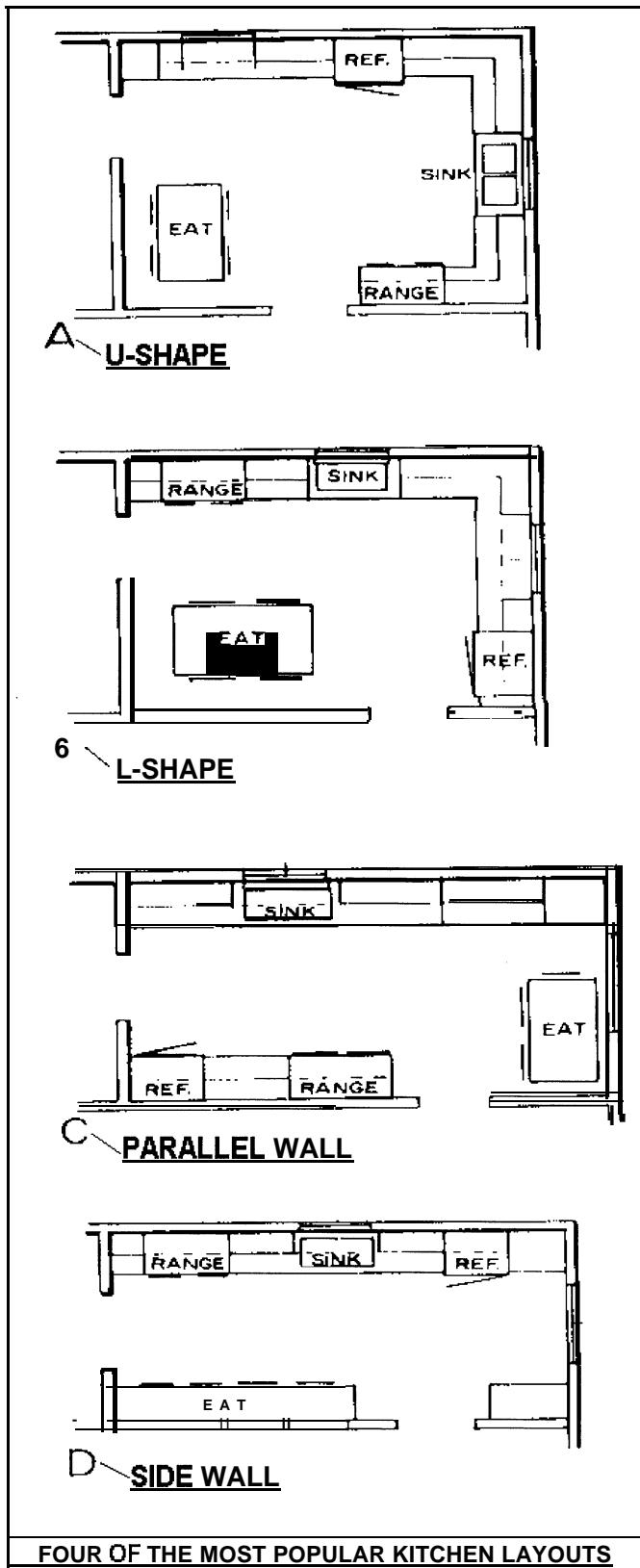
SECTION 20: KITCHEN

A. PURPOSE :

The kitchen in many households is used more than any other room in the house. For this reason, defects found in the kitchen will be more prominent in the residents' mind and usually first on the tenants' list of complaints. The kitchen is host to numerous activities including food preparation, storage of food, cleaning supplies and eating utensils. Dish and utensil clean-up after meals is a common activity in kitchens. When space is provided in the kitchen for a dining area, additional family recreational activities may take place at the dining table.

B. COMMON DEFECTS :

The most common problems found in kitchens include insufficient space, poor overall layout or design, inadequate countertop work-area, and inadequate cabinet storage space. Defects may be present in the walls, floor or ceiling as covered elsewhere in this guide. As lighting is often insufficient in kitchens, dark stained cabinets only aggravate this situation. Defects found in cabinets and countertops are also included as kitchen defects. They may include

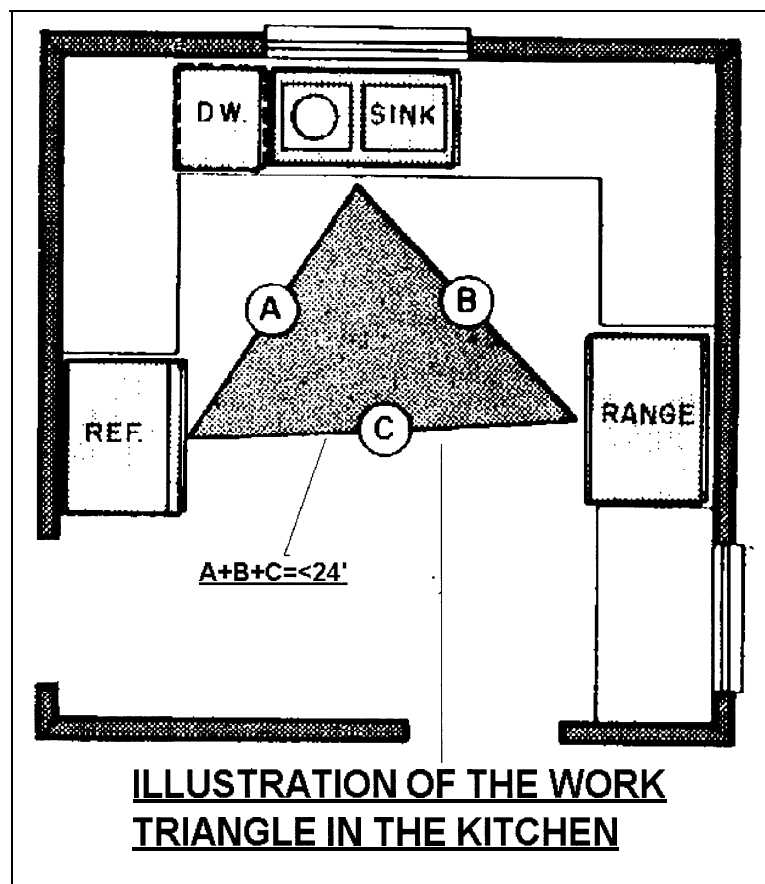


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warped doors and drawers that will not close properly, separation of the cabinets from the wall, general deterioration of the wooden components (especially particleboard), or delaminated plywood. Cabinets may also have broken hinges, missing drawer and door pulls, or they may just be plain ugly. Countertop laminate may have excessive cuts or scorch marks. The wood material under the formica may be damaged, swollen or deteriorated causing the laminate (formica) to crack or delaminate. Countertop material may be an outdated or ugly color or pattern.

C. INSPECTION PROCEDURE :

- a. Assess the layout and floorspace available in the kitchen by comparing it to other comparable housing in the private sector. Kitchens should provide ample floorspace for free movement during meal preparation. However, floorplans that force foot traffic to pass through the kitchen are not recommended due to increased risk of injury from people bumping into each other, especially during meal preparation times.



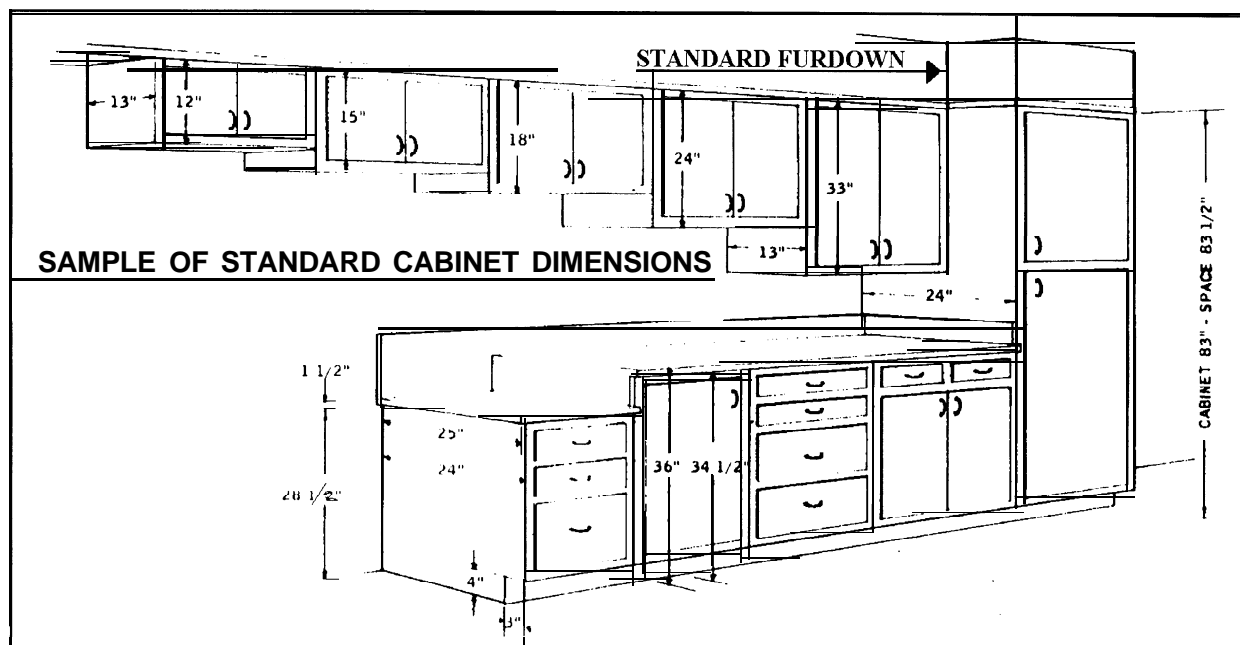
- b. Measure the length of the "work triangle". The work triangle is defined as the total distance between major work areas in the kitchen (range, refrigerator and sink). The total distance should not exceed 24 linear feet. All major work areas can be located on the same wall and still be considered a triangle. A triangle contains 180 degrees, but a straight line also contains 180 degrees.

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- c. Inspect walls, floors and ceilings for defects noted in those respective sections of this guide.
- d. Determine overall illumination of the kitchen. Consider natural and artificial light sources. The kitchen should be flooded with light with no dark spots. Lighting should be properly located to facilitate illumination of the cabinets.
- e. Check operation of the range hood.
- f. Note overall condition of wall cabinets. Check to verify they are securely fastened to the wall. Note the overall condition of the cabinets considering warped doors, gouges, delamination of veneer, missing or sagging shelves and the condition of pulls and hinges.
- g. Inspect condition of base cabinets. Look at all conditions noted in the previous paragraph. In addition, look for water damage underneath the sink and note the operation of all drawer slides and guides.
- h. Inspect condition of countertops. Note all defects involving scorch or burn marks, cracks, loose laminate, excessively worn material or water damaged wooden base material.
- i. Ensure caulking is sufficient around the sink and at joints on countertops to prevent unwanted and damaging migration of water.
- j. Ensure plumbing and electrical and gas components are in good working order per the respective sections of this guide.
- k. Ensure adequacy of cabinet and countertop space per the recommendations listed below.

RECOMMENDED MINIMUM CABINET AND COUNTERTOP SPACE				
Wall Cabinets and Shelving	Min. Depth 10"	2&3BR 24 SF	4BR 28 SF	FLAG 32 SF.
Base Cabinet and Shelving	22"	24 SF	28 SF	32 SF
Drawers	20"	12 SF	15 SF	17 SF
Countertops (Approx. linear inches).....	23"	16 SF (100")	20 SF (125")	22 SF (137")
NOTE: The ideal countertop layout would include a minimum of 15" counterspace on each side of the range and on one side of the refrigerator.				
SF= Square feet				

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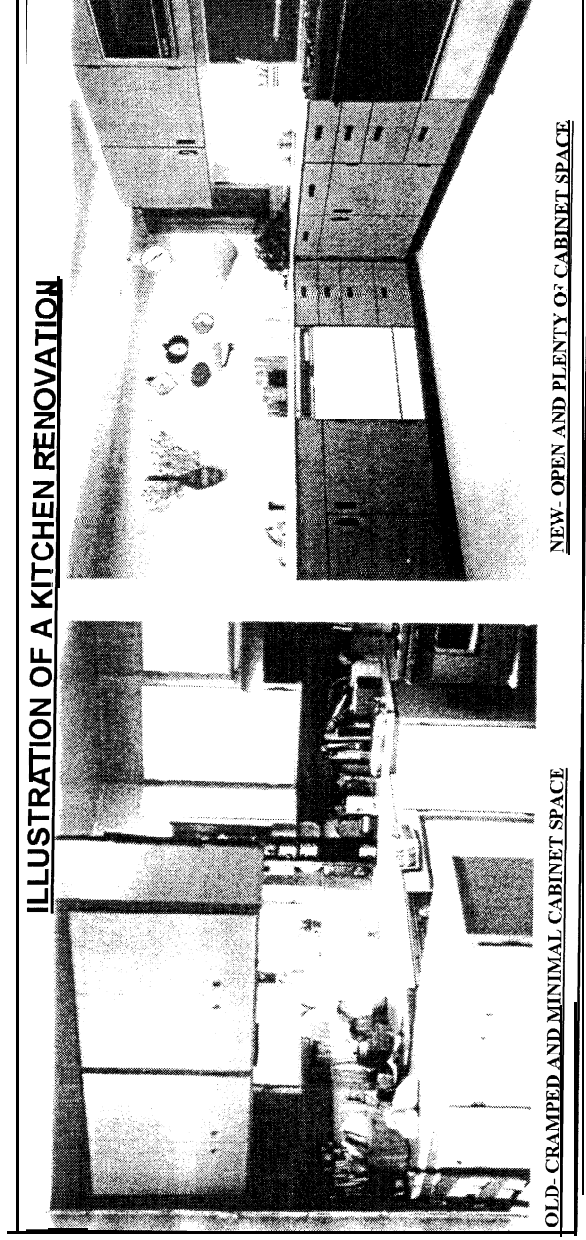


D. RESULTS AND CORRECTIVE ACTION :

- If the kitchen layout or condition is found to be substandard compared to the normal prevailing modern kitchen designs in use today, zero in on those inconsistencies identified. If the kitchen is designed as a major traffic point, consider alternative designs to re-route foot traffic from the kitchen. Consider removal or installation of partition walls to accomplish this goal. Initiate **SSMR's**.
- The work triangle should be redesigned to conform to the recommended proportion. This is often easier said than done due to the amount of plumbing, electrical and carpentry work involved. Initiate **SSMR's**.
- All defects identified by using the established procedures for walls, floors and ceilings should be repaired per the suggested methods in the respective sections.
- If the lighting level does not provide adequate illumination, initiate local action or **SSMR's** to provide additional lighting.
- If the range hood is inoperable or is not present, repairs should be made or **SSMR** submitted to install range hood.
- Initiate repairs to cabinets to restore an attractive appearance, removing all surface and working mechanism defects. Add or replace cabinets as required to meet suggested minimum square footage recommendations.
- Replace fronts, slides, glides and hardware on all drawers and doors as required to ensure smooth operation.

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- h. Replace all damaged countertops if required.
- i. Recaulk all joints around the sink and countertop to prevent water damage.
- j. Replace or upgrade plumbing, electrical and gas equipment to comply with recommendations listed in their sections of this guide.
- k. Initiate SSMR's as necessary to add additional laundry area and thereby remove washer and dryer connections from the kitchen.



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SECTION 21 : APPLIANCES

A. PURPOSE :

This section covers appliances that are normally **Government-**provided in Coast Guard-owned housing. Often referred to as major appliances, included in this category are ranges, range hoods, refrigerators, dishwashers and garbage disposers. Freezers, microwave ovens and trash compactors are sometimes provided in selected housing units. The reasons for providing major appliances are obvious and highlight the necessity for a level of consistency in the type and condition of **Government-**provided appliances from site to site.

B. COMMON DEFECTS :

Common defects often involve safety-related problems and must be corrected immediately. The absence of certain appliances, normally Government-provided, will constitute a common defect. Other common defects will include nonfunctioning or malfunctioning appliances, outdated features, dents, scratches, rust stains, or other signs of severe wear and tear.

C. INSPECTION PROCEDURE :

- a. Check Maintenance History File to determine the age of major appliances. Using life expectancy table, determine if replacement should be considered.

<u>APPLIANCE</u>	<u>LIFE EXPECTANCY</u>
Range hood	10-15 Years
Range	11-19 Years
Refrigerator	11-18 Years
Dishwasher	8-14 Years
Garbage disposer	7-12 Years
Microwave oven	5-10 Years
Freezer	13-20 Years
Trash compactor	8-13 Years

- b. Check appliances for dents, rust, scratches, chips or other signs of wear and tear.
- c. Determine if all appliances are in harmony with kitchen decor in terms of age, design and color.
- d. Inspect range to ensure all burners and oven operate properly. Gas ranges should be equipped with ignition

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- devices other than standing pilot flame. The risk of explosion is much higher in ranges having pilot flame ignition. Test operation of lights, clock and timer.
- e. Check for the existence and proper operation of range hood filter, fan and light.
 - f. Inspect refrigerator to ensure proper operation which is identified by sufficient cooling and freezing capacity. Inspect door gaskets for cracks or separation from the door. Check the interior surfaces for cracks, stains, odors, or rust.
 - g. Operate dishwasher. Look underneath and around the bottom of the door for leaks. Check the condition of the door gasket. Inspect the interior surfaces of the dishwasher for signs of rust, corrosion or other visible excessive wear.
 - h. Operate garbage disposal. Listen for unusual noises indicating diminished performance or excessive wear. During operation look at all plumbing connections for signs of leakage.

D. RESULTS AND CORRECTIVE ACTION :

- a. Replace or initiate SSMRs to replace appliances when age or wear and tear renders them unsatisfactory in operation or appearance.
- b. Immediately repair or replace appliances when a condition exists which could lead to a safety mishap. This could involve a gas leak or electric shock hazard.'
- c. Install, replace or repair range hood as required. Those vented to the outside are preferred.
- d. Repair refrigerator/freezer door gaskets if cracked or separated.
- e. Replace appliances as required to ensure uniformity in design, color or other appearance.
- f. Repair all plumbing leaks discovered during appliance inspection. This will avoid further damage to flooring or cabinets.
- g. Repair leaks associated with the dishwasher by replacing the door gasket or plumbing connections as required.

SECTION 22 : ELECTRICAL SERVICE

A. PURPOSE :

The electrical system provides a-sufficient safe power supply to appliances, mechanical equipment, light fixtures, and an adequate number of properly grounded outlets for convenient use.

B. COMMON DEFECTS :

Common defects in the electrical service will include the absence of individual circuits for major equipment and appliances, **non**-grounded outlets, insufficient number of outlets, outlet wiring may be connected out of polarity, and **GFI** (ground fault interrupter) outlets in bathrooms and adjacent to kitchen and utility sinks may be absent. Other defects may include an overall inadequacy in the service amperage provided to the unit. The National Electrical Code establishes the minimum service amperage required for residential service. An insufficient number of lighting fixtures, resulting in poor illumination, is also a defect related to the electrical service. In older units, the electrical wiring insulation may be deteriorated and is therefore a fire and safety hazard. The absence of hard-wired smoke detectors with battery back-up is also a common defect.

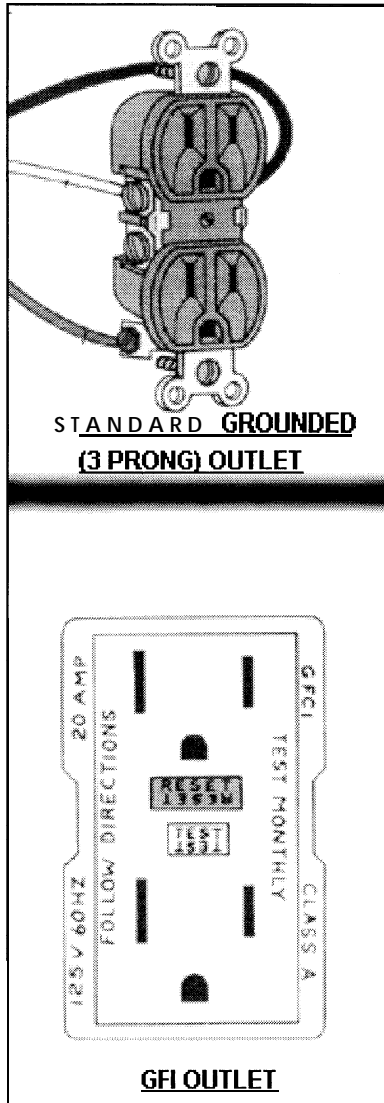
C. INSPECTION PROCEDURE

⇒ WARNING !

The physical inspection of the electrical system should be performed recognizing the hazards associated with electricity. Serious injuries may result from carelessness while performing this inspection. In some cases, assistance may be required from an electrician familiar with National Electric Code.

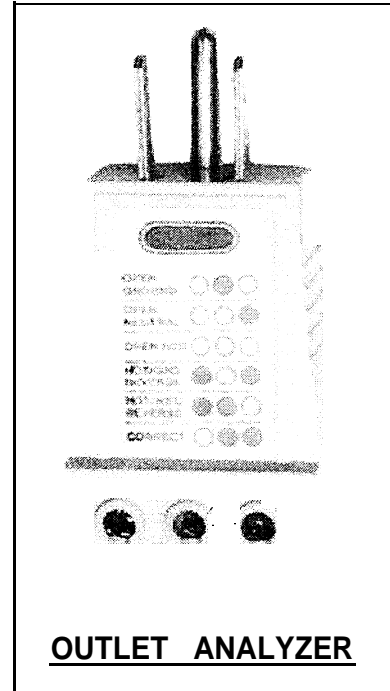
- a. Check maintenance history files for recurring complaints of circuit overloads indicated by blown fuses, tripped breakers, or excessive fluctuation in the intensity or flickering of lights when other electrical equipment is energized.
- b. All housing units must have at least one hard-wired smoke detector with battery back-up on each level of living space and in the basement. Check for **available** electrical current and proper operation.
- c. Walk through each room and determine the need for additional lighting fixtures. It would be a good idea to do this after sunset.

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- d. Determine the existence of sufficient properly-grounded (three hole) outlets. Also document existence or absence of GFI outlets in bathrooms, kitchens and utility rooms. All exterior outlets, if present, must be GFI type.

- e. If grounded polarized receptacles are present (three hole with one short and one longer slot), use an outlet analyzer on each outlet to ensure proper polarity is provided. The directions for the use of the analyzer will be included in the package.



- f. Certify service panel amperage capacity complies with National Electric Code requirements.

100 amps is the minimum allowed. The dwelling size and the type of installed equipment may require a larger service amperage.

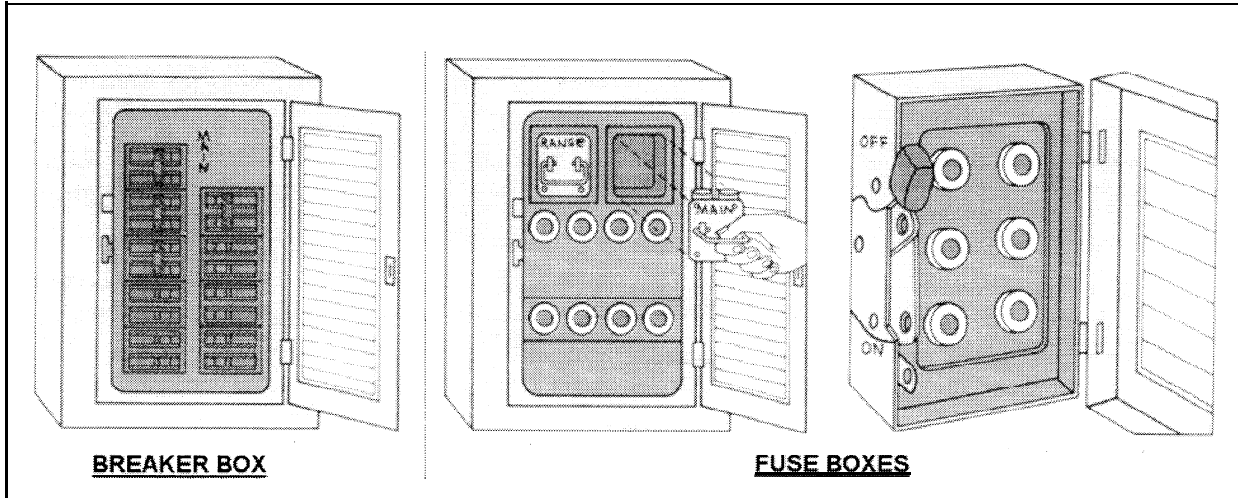
- g. Determine if additional circuits or an upgraded service panel is required due to additional loads added since original service installation.
- h. Inspect all outlets and switches for signs of physical damage that might include loose mounting screws, cracks in the plastic covers, or excessive paint build-up which is unsightly. Outlets may be worn, which inhibits holding a plug firmly and can lead to a short circuit or fire. Some outlets may not readily accept a plug. This is caused by bent contacts in the outlet. Switches and outlets may become unsightly strictly due to age. Inspect to ensure all covers are in place. Check for uniformity of color in all covers throughout the unit.
- i. Manually test all GFI outlets. Push the "TEST" button to trip the outlet, check to ensure no voltage is present. Push the "RESET" button and ensure power is restored. In some cases there may be a GFI breaker in the distribution panel; test it in the same manner.
- j. Ensure all exterior outlets and switches are protected with

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weatherproof covers.

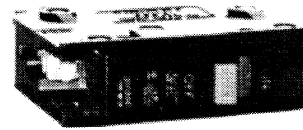
D. RESULTS AND CORRECTIVE ACTION :

- a. Initiate SSMR to upgrade service panel and distribution if service is below 100 amp/220v or is inadequate for existing or anticipated loads.

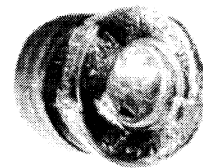


- b. Initiate SSMR to rewire unit with ground wire capability if existing outlets are non-grounded. (The presence of two slot type outlets without ground hole indicates improper grounding.)
- c. Add additional light fixtures and circuits as required.
- d. Add GFI outlets in bathrooms, kitchen and exterior spaces as required by the National Electric Code.
- e. Replace GFI outlets or breakers that do not trip and reset as required.
- f. Correct polarization errors discovered with the outlet analyzer.
- g. Repair/replace faulty outlets and switches.
- h. Replace outlets, switches and their covers which have excessive paint build-up or are not uniform in color and type with those predominately installed throughout the dwelling.
- f. Install weatherproof covers on all exterior outlets and switches.

**FOR MORE INFORMATION SEE
PAGES 408-421 IN THE STANLEY COMPLETE
STEP-BY-STEP BOOK OF HOME REPAIR AND
IMPROVEMENT**



BREAKER



PLUG FUSE

**CARTRIDGE
FUSE**



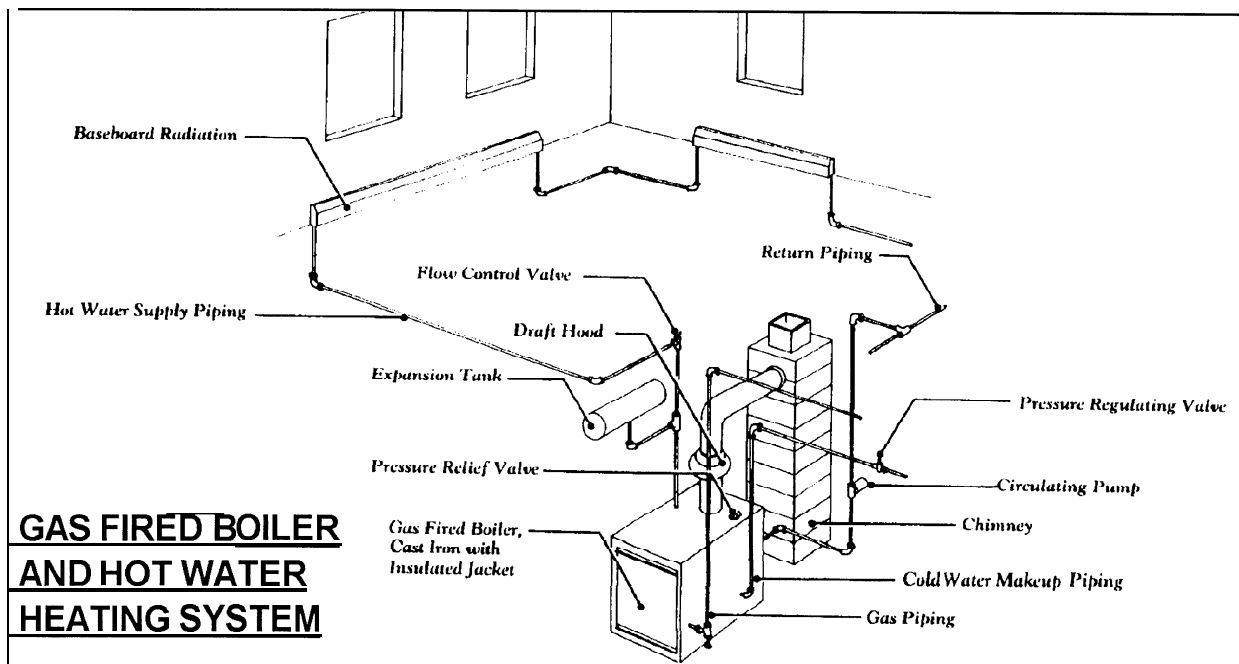
SECTION 23: HEATING AND AIR CONDITIONING SYSTEMS

A. PURPOSE:

Air conditioning systems (further referred to as A/C systems) provide cool air to all habitable areas of the unit during warm weather months. Heating systems maintain a minimum of 68 degrees Fahrenheit in all habitable areas of the unit during cold weather months. Both are intended to provide a comfortable indoor environment regardless of outdoor climatic conditions.

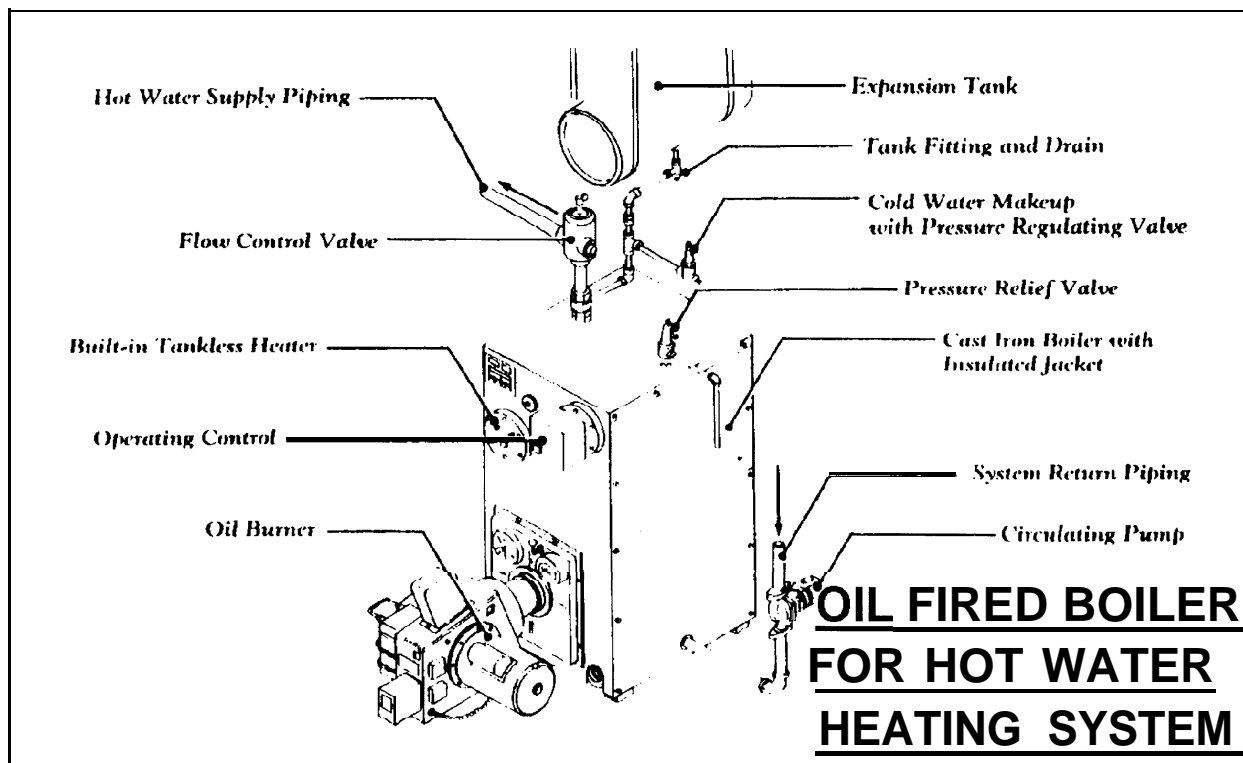
B. TYPES:

1. A/C:
 - a. CENTRAL FORCED AIR (conventional)
 - b. CENTRAL FORCED AIR (heat pump)
 - c. WINDOW UNITS
2. HEATING:
 - a. CENTRAL FORCED AIR (gas or fuel oil furnace)
 - b. CENTRAL FORCED AIR (electric furnace)
 - c. CENTRAL FORCED AIR (heat pump)
 - d. ELECTRIC BASEBOARD SYSTEM
 - e. CIRCULATING HYDRONIC SYSTEM (boiler, hot water, radiator)



C. COMMON DEFECTS :

A/C and heating systems share many common defects but many unique defects are found specific to the individual type of system installed. Common mutual defects that might be present will include faulty thermostats, noisy or squeaky fans, uneven temperatures from room to room, or duct work leaks allowing conditioned air to escape into attic or crawl spaces. Defects unique to A/C systems include condensate leaks, dented fins on



the evaporator or condenser coil which restrict air flow and efficiency, accumulations of lint and dirt on the evaporator coil(indoor), accumulations of grass clippings, leaves or trash on the condenser coil(outdoor), refrigerant leaks, or defective compressors. Gas or fuel oil furnaces have the potential for serious and even FATAL defects which would include improper flame adjustment, corroded or rusted heat exchangers, and cracks in the heat exchanger allowing CARBON MONOXIDE fumes to enter the unit through the duct work. Electric furnaces may have burned elements resulting in little or no heat output. Most heat pump defects will be discovered with or related to the A/C system defects. Electric baseboard heating system defects will include insufficient heating capacities, inoperable room thermostats, physically damaged individual units, or units' air circulation blocked by household furnishings. Common defects of hydronic or

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hot water systems will include hot and cold rooms, pinging and clanging radiators, scale build-up in boilers and radiators and insufficient boiler water heating and circulating capacity.

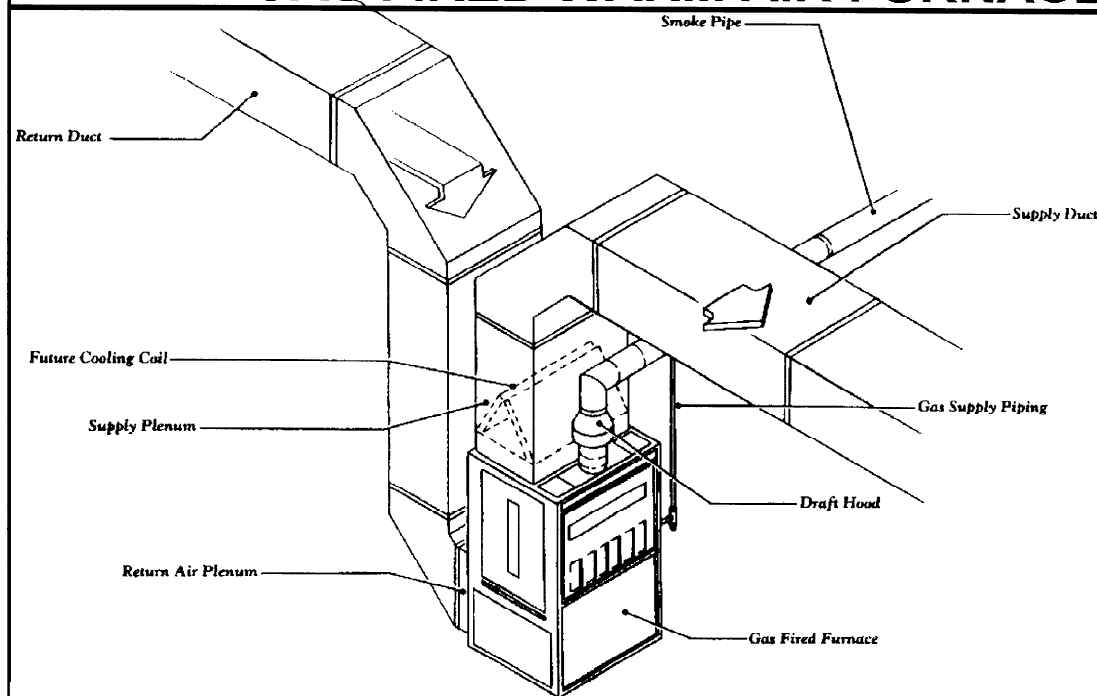
D. INSPECTION PROCEDURE :

⇒ NOTE

The following inspection is a general assessment of the condition and operation of the heating and A/C system. No special skills or experience is required. Only if serious defects were found would a professional contractor be required to assist or perform repairs to the defective component.

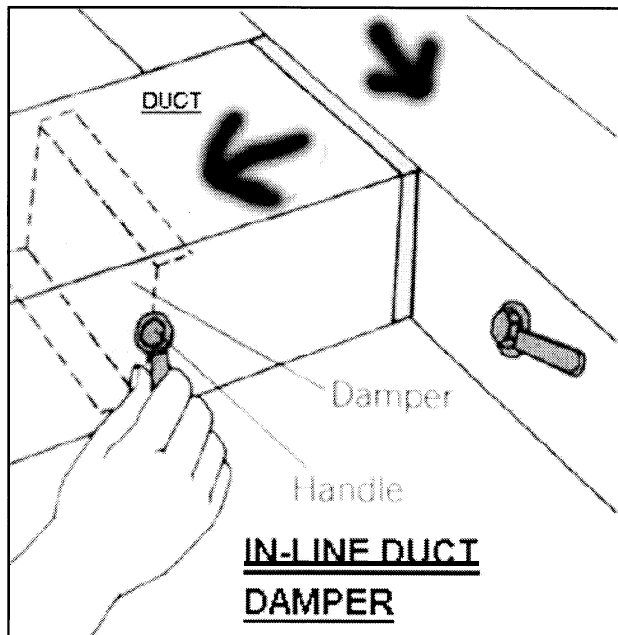
- Review unit maintenance logs to discover the existence of recurring tenant complaints regarding the heating or A/C system.
- Operate the central A/C or heating system as appropriate for the season. Note all unusual sounds associated with the fans or compressor. Walk through the dwelling when the unit has cycled off to verify the consistency of temperatures from room to room. An imbalance may be more apparent in two story units. Check the operation of the thermostat by comparing the on/off temperature setting with an HVAC mechanics thermometer or other accurate thermometer.

TYPICAL GAS FIRED WARM AIR FURNACE



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- c. Inspect along refrigerant lines for signs of oil or refrigerant leakage at fittings. Look for missing or torn insulation along the refrigerant lines.
- d. Inspect all filters, condenser and evaporator coils for accumulations of dust and other debris-or obstructions affecting the air flow through the coils. Inspect area around condensate drip pan and drain line for visible signs of leaks or overflows.



- e. On forced air systems, inspect along the duct work in the attic or crawl space. Manually switch the blower fan to the "on" position at the thermostat for this inspection. While the fan is running, crawl along the duct work, listening and feeling for any escaping air. Visually check to see that the duct insulation is intact with no tears or missing pieces. Animals will often tear insulation away from the duct, especially in crawl space areas. Note all areas where air is escaping from the duct

work; this will occur most often where the duct connects to a register or grill. Note the position of all in-line duct dampers.

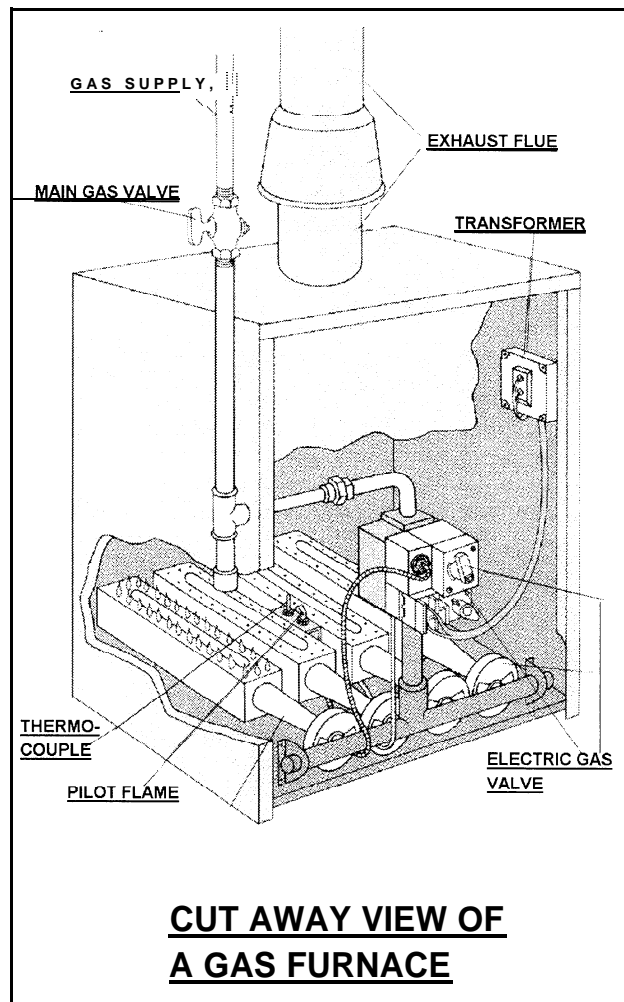
- f. While systems are operating, measure the supply air temperatures to evaluate system operating efficiency. For A/C systems, a temperature probe should be inserted at the air handler plenum. The supply air should be approximately 20°F cooler than the room or return air temperature. For heating systems, the following norms should be expected: with a room or return air temperature of 70°F, a gas or oil furnace should provide supply air of approximately 120°F; an electric furnace will provide supply air in the 110°F range; heat pump supply air will be considerably lower, usually between 95°F and 100°F with auxiliary heat strips de-energized; boilers should circulate water of approximately 130°F but will vary depending on unit settings.
- g. Annually, all gas and oil-burning furnace combustion chambers and heat exchangers should be visually inspected for signs of excessive rust, corrosion or soot build-up.

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- Special attention should be given to the discovery of cracks or holes in the heat exchanger.
- h. Inspect furnace exhaust flue for any loose joints or holes that could allow fumes to enter the dwelling.
 - i. Inspect electric furnaces for visual condition, noting any visible signs of electric component burnout.
 - j. Inspect electric baseboard systems for any visible damage. Energize individual units at the thermostats to ensure heat output.
 - k. Test boilers when climate conditions allow. Inspect the condition and operation of boiler, expansion tank, valves and pumps. Inspect exhaust flue to ensure no fumes can escape to the dwelling. Inspect and ensure proper operation of radiators and thermostats.

E. RESULTS AND CORRECTIVE ACTION:

- a. Oil, or replace if necessary, squeaky or noisy fan and blower motors.
- b. Clean all dirty and obstructed coils. Straighten dented coil fins using a fin comb. Replace dirty filters.
- c. Replace thermostats as required to alleviate temperature differences between the actual temperature and the setting of the thermostat.
- d. Repair all refrigeration and oil leaks. Replace missing or torn insulation on refrigeration lines. Recharge system with freon as required.
- e. Repair all leaks in the duct system noted in the inspection. If the ducts are found to be excessively corroded or beyond repair, initiate an SSMR to replace all duct work. Repair tears and replace areas of missing insulation.



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- f. Seasonally adjust the in-line duct dampers to balance the temperatures throughout the unit. This is especially important in two-story units having only one heating and cooling system. During the heating season, the largest percentage of air should be directed downstairs. During the cooling season, the majority of air will be directed upstairs. This is due to the natural tendencies of hot and cold air to rise and fall. The individual room registers will aid in the balancing of temperatures from room-to-room but are no substitute for in-line duct dampers. If problems persist in balancing temperatures, additional dampers may need to be installed within the ductwork.
- g. Replace rusted or corroded condensate drip pans.
- h. Adjust flames on fuel-burning furnaces to reduce or eliminate excessive soot accumulation.
- i. Immediately replace heat exchanger or entire furnace if holes or cracks are discovered in the heat exchanger during the inspection. **DO NOT ALLOW THE FURNACE TO BE USED UNTIL REPAIR OR REPLACEMENT HAS BEEN ACCOMPLISHED. FATALITIES MAY RESULT.**
- j. Repair leaks or loose joints discovered in exhaust flues of fuel-burning furnaces or boilers.
- k. Replace defective heating elements or components found in electric furnaces.
- l. Adjust flame on boilers, adjust valves and thermostats as required.
- m. Remove home furnishings obstructing air flow around radiators and electric baseboard heaters.
- n. Initiate SSMRs to replace older A/C systems with newer, more energy-efficient models. Oftentimes, the reduced operating cost of new units will produce a lower life cycle cost than retaining the older unit. Rebates from local utility companies for installing energy efficient systems should be included in the life cycle cost formula.
- o. Initiate SSMR's to remove underground fuel-oil storage tanks.

FOR MORE INFORMATION SEE PAGES 422-439 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

SECTION 24 : PLUMBING SYSTEM

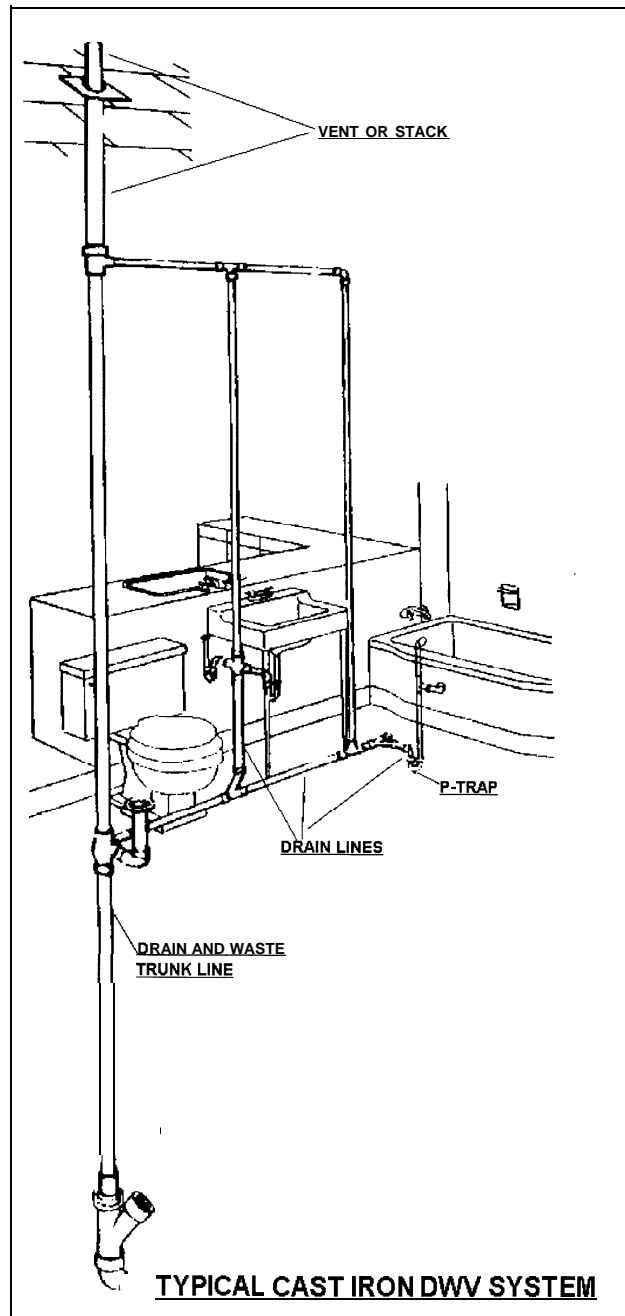
A. PURPOSE :

The plumbing system is a series of piping and tubing components. This piping and tubing consist of various sizes and materials. The purpose of the plumbing system is to provide a sufficient supply of safe, potable hot and cold water at an adequate delivery pressure and then to remove the used water and accumulated waste from the dwelling.

B. COMMON DEFECTS :

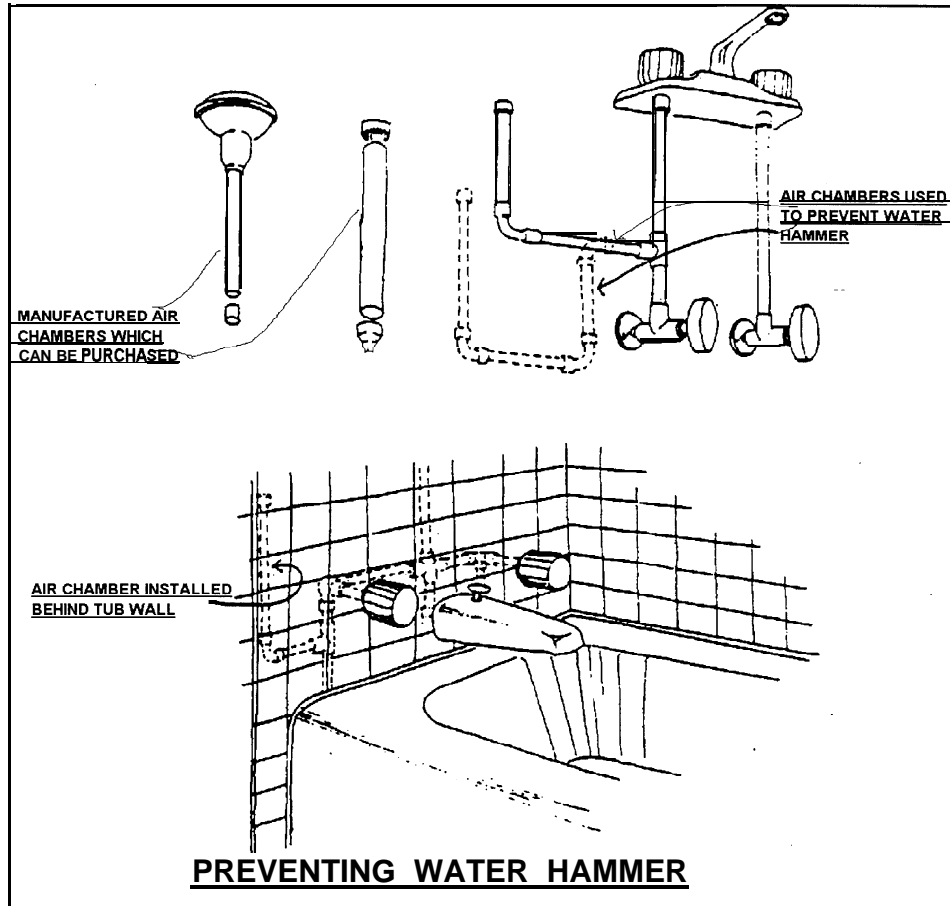
The most common defects on the supply side of the plumbing system are inadequate pressure, insufficient quantities of hot water, leaks, and dripping faucets. THERE MAY BE ENVIRONMENTAL HAZARDS ASSOCIATED WITH THE SUPPLY PLUMBING INVOLVING LEAD CONTENT IN THE WATER, THESE HAZARDS ARE ADDRESSED FURTHER IN THIS SECTION. Some housing units may experience a problem with "water hammer". Water hammer is an annoying bang or knock when a faucet or other water outlet is turned off.

Defects associated with plumbing fixtures are covered in the bathroom section. Common defects associated with the drain, waste and vent (DWV) side of the plumbing system are clogged or partially clogged drains, inadequate venting, and leaks.



C. INSPECTION PROCEDURE :

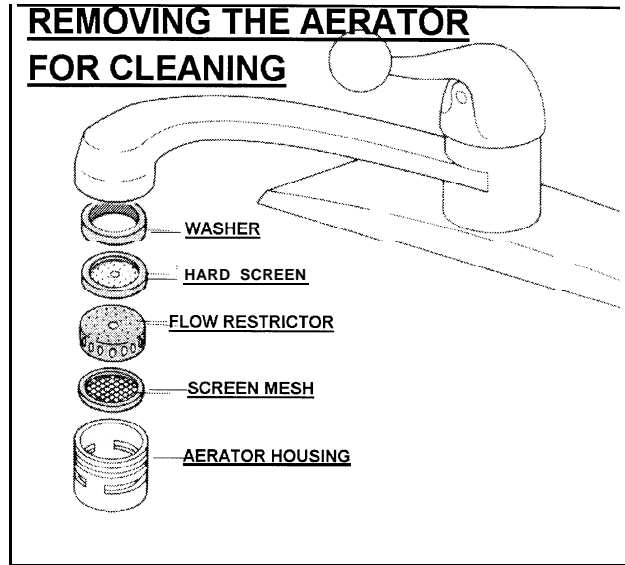
- a. Look in the attic, basement or crawl space to determine the type of piping used for the supply system. Look to find the type of pipe used for the DWV system.
- b. Check maintenance records for recurring service requests involving the plumbing system.
- c. Visually check each faucet, including outdoor hose bibbs, for leaks and drips.



- d. Check faucets and hose bibbs for adequate pressure. Adequate pressure will deliver enough water to fill a one quart container in roughly five seconds with a fully-opened faucet. A water-saver shower head will take about 6 seconds under adequate pressure. Lavatory and sink faucets should be checked for adequate pressure only after removing the aerator. A clogged aerator will cause the appearance of inadequate pressure.
- e. If inadequate pressure is determined, check other units on the same water system to determine if this problem is isolated to one unit or if the water main servicing a number

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- of units is to blame for the low pressure.
- f. If a low pressure problem is found to be isolated to one unit, find the best point to obtain a cross section view of the interior surfaces of the pipe. Look for accumulations of scale, mineral deposits or corrosion which has reduced the original inside dimensions of the pipe.
 - g. At all points where a visual inspection of the piping system is possible, check for leaks or excessive corrosion.
 - h. Verify the existence of a temperature and pressure relief valve on all water heaters.
 - i. Turn several faucets on and off quickly; listen for water hammer.
 - j. Inspect under sinks and lavatories for drainage leaks. Most drainage leaks occur at the traps located beneath these fixtures due to the expansion and contraction in the piping caused by the close proximity to the release of hot and cold water from these fixtures. The vibration of a garbage disposal under a kitchen sink also contributes to trap leaks.
 - k. The best way to assess the condition of the drainage system is to measure the amount of time required for a specific amount of water to drain from individual fixtures. The following table is offered as general guide. A small fluctuation of one or two seconds is acceptable.



TIME REQUIRED TO DRAIN 1 GALLON OF WATER

<u>FIXTURE</u>	<u>SECONDS/GALLON</u>
Lavatory	6
Bath tub/shower stall	5
Laundry tub	4
Kitchen sink	3

Listen for gurgling sounds while the fixture is draining; this is often trap siphonage indicating insufficient venting.

1. If the drainage time of a specific fixture exceeds those recommended above by 3 seconds, a partial stoppage is

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probable.

- m. Operate garbage disposal to ensure proper operation.

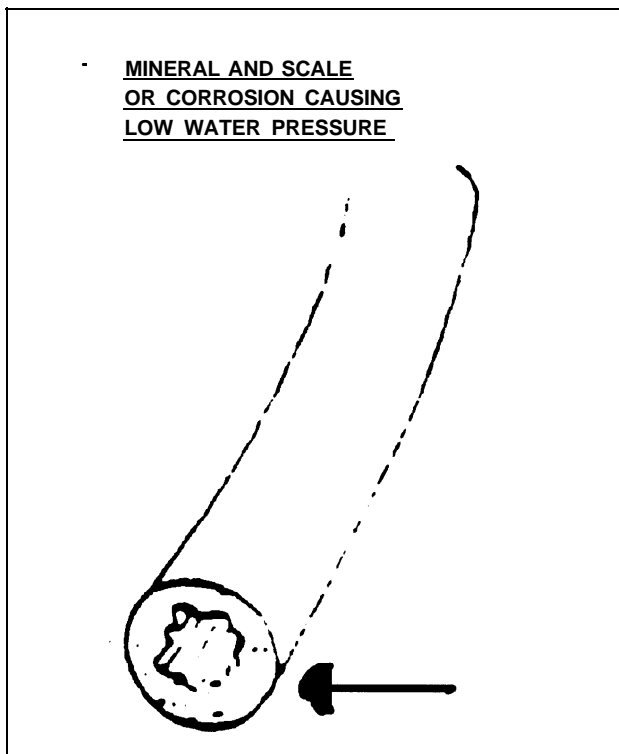
D. RESULTS AND CORRECTIVE ACTION :

- a. The type of piping used in the supply and DWV sides of the plumbing system should conform to the Plumbing Codes of the National Model Building Codes for the local geographic area. Usually, supply lines will be galvanized steel, copper tubing or brass piping. The use of polyvinyl chloride (PVC) or polybutylene plastics are strongly discouraged and in many areas forbidden for interior uses by local plumbing codes. DWV piping will normally be cast iron, PVC or acrylonitrile-butadienestyrene (ABS). In older units, steel or copper piping may be found.

⇒ WARNING

If copper tubing is used and joined together by **solder**, the water must be tested immediately to determine if lead is migrating from the solder joints and contaminating the water supply.

- b. Replace washers and seats as required to alleviate drips and leaks from faucets and hose bibbs. If leaks persist around the body of a faucet, the cartridge or stem may require replacement.



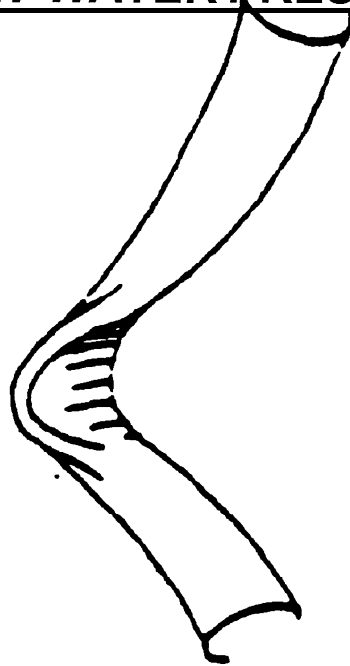
- c. Install water-saver showerheads.
- d. If aerators and showerheads are found to be clogged, manually clear them of obstructions. Accumulations of lime and mineral deposits from the water can be dissolved by soaking the aerators in vinegar.
- e. Low water pressure that is common to a neighborhood or throughout the water main cannot be corrected in an individual unit. If this is a chronic problem, it

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should be pointed out to the base engineer or municipal agency from which water service is received for action to be taken.

- f. A single unit suffering from low water pressure should be investigated thoroughly to determine the cause. Check the size of the service line from the main to the unit. It should be no smaller than 3/4" I.D. Replace service line if it does not meet this minimum dimension. Check all valves along the service line and trunk lines to insure they are fully open. If a cross section view of the supply lines reveal they are clogged or restricted by scale build-up or corrosion, a SSMR should be submitted to replace all supply piping within the unit.
- g. Water hammer should be eliminated by installing air chambers directly behind all sinks, lavatories and washing machine connections. An air chamber is simply a straight piece of tubing installed vertically using a tee fitting in the supply line in the wall directly behind the cutoff valve.
- h. Repair all leaks discovered in the visual inspection of the drainage system.
- i. Replace garbage disposal if required.
- j. If stoppages or clogs are evident from the inspection, remove them by using a plunger or drain auger. Always remove the pop-up from lavatories when using a plunger. Chemical drain cleaners are not recommended due to the hazards involved with their use, handling and disposal. Mechanical drain cleaning will always yield better results with less damage to the system piping. Many indoor drain restrictions can be eliminated by periodically pouring a few gallons of water, boiled on the stove, down each drain. This will help dissolve grease and soap accumulations. Hot tap water is insufficient for this purpose.
- k. A more serious stoppage will involve roots penetrating the sewer line between the unit and the main. If they persist

CRIMPED PIPE OR TUBING WILL CAUSE LOW WATER PRESSURE



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after clearing with an electrical drain auger (roto-rooter), replace the sewer line.

- l. Periodically add water to floor drains to prevent sewer gases from entering the unit.
- m. Install temperature and pressure relief valve on the water heater if not present.
- n. Replace faulty electric hot water heater elements.
- o. Replace hot water heater if rated capacity is insufficient for demand and repeated tenant complaints of inadequate quantities of hot water are documented in maintenance logs.

FOR MORE INFORMATION SEE PAGES 390-407 IN THE STANLEY COMPLETE STEP-BY-STEP BOOK OF HOME REPAIR AND IMPROVEMENT

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- A -

ACOUSTICAL CEILING PANELS- Sound-absorbing components of a suspended acoustical ceiling system. The term "panel" suggests the material is greater than 12" X 12" in size.

ACOUSTICAL CEILING TILE- Sound-absorbing components of an acoustical ceiling system. The term "tile" suggests the material is 12" X 12" or smaller.

ADHESIVES- Any type of glue used to stick one material to another, such as vinyl tile to a concrete floor or ceramic tile to gypsum board. Usually applied with a notched trowel or caulking gun.

AGGREGATE- Sand, pebbles or small rock added to cement and water to make concrete.

AIR CHAMBER- Used in plumbing water supply piping to prevent water hammer. Most often located in the wall behind lavatories, sinks and bathtubs.

AIR HANDLER UNIT- An electrically-driven blower that moves the air through the ducts in central heating and cooling systems. It is usually equipped with filters to remove dust particles from the air.

AMPERAGE (AMP RATING)- The rating of the amount of electricity that can flow through a conductor or circuit. The higher the amperage, the more electricity can flow.

ASPHALT- A mineral pitch, usually black in color, used extensively in roadway and parking lot paving. Used for waterproofing in construction.

ASPHALT TILE- An older type of resilient floor tile that has an asphaltic base. This type of tile is subject to severe damage by some floor cleaners and solvents. Vinyl composition tile is a preferred option.

-B-

BACK SPLASH- The horizontal board that trims the joint between a countertop and a wall. It is usually finished to match the countertop. Some countertops have an integral or molded one-piece back splash.

BARGE RAFTER- The rafter that supports the overhang along the rake of a gable. A barge rafter can also serve as the fascia.

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BASE- Rocky or earthy material that serves as a foundation the surface layer of pavement. The base is compacted to prevent settlement in the pavement. It is also sloped to establish the drainage patterns of the pavement.

BATTENS- Thin wood strips or boards used to cover joints between other materials.

BEAD- A narrow line of caulking or sealant that is uniform in thickness and shape.

BED JOINT- The mortar joint immediately below a brick, masonry unit or tile.

BELT SANDER- A type of power sander that uses a belt-like loop of sandpaper. Regular belt sanders are very handy for fitting doors while large belt sanders are useful in the refinishing of wood floors.

BI-FOLD DOOR- A door that is hinged in the middle to enable it to fold against itself. Most often used for closet doors.

BLACK TOP- Slang term for asphalt paving.

BLEEDING- The condition in which previous coatings of a different color work up to and through subsequent coatings of paint or stain. Application of shellac or other sealer is helpful to prevent this occurrence.

BLISTER- A defect or bubble on a surface usually caused by the application of heat. In roofing, a bubble in the membrane of a flat roof caused by water vapor underneath expanding from the heat of the sun on the roof.

BREAKER- See circuit breaker.

BRIGHTS- Common, non-galvanized steel nails used on interior construction. If used on the exterior they will promptly rust.

BUILDERS FELT- See felt.

-C-

CAPILLARY ACTION- The molecular phenomenon wherein water is drawn into and even upwards in seemingly tight-fitted waterproof joints.

CAULKING- Both the product and the act of applying the product in the multitude of holes, cracks, crevices and joints found in a typical dwelling when a wind-and-waterproof seal cannot be obtained by any other means. A nonstaining, pliable,

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adherent caulk is forced into the opening and the result is a wind-and-waterproof seal.

CAULKING GUN- A manually activated tool used to apply caulking, sealants and adhesives.

CEMENTITIOUS- A material that has the nature or quality of cement. Includes any material that contains portland cement as a major ingredient.

CEMENTITIOUS DECKING- Commercial roof decking fabricated from large wood fibers and portland cement.

CFM- Acronym for cubic feet per minute. Generally used as measurement for the movement of air or a gas through a pipe or duct.

CHALKING- The powdery residue that forms on paint after prolonged exposure to the sun and weather.

CHAMFER (BEVEL)- To remove the corner angle between intersecting planes, to cut a ninety degree angle into two forty-five degree angles.

CHARLIE BAR- A bar used to secure sliding glass doors in the closed position.

CIRCUIT BREAKER- A protecting switch that will automatically stop the flow of electricity in a circuit when more electricity is drawn than the capability of the circuit. It can be manually reset and reused.

CLEANOUT- A removable plug in the plumbing drainage system used to gain access to clean out clogs and obstructions.

CONDENSATE DRAIN- In HVAC systems, the pipes through which condensation drains to the exterior or to a plumbing drain line.

CONDENSATION- The liquid resulting from warm air contacting a cold surface. In winter, condensation will form on the inside of windows and metal doors. In the summer, it may form on the outside of windows. It is also formed by HVAC systems as air passes over the cooling coil.

CONDUIT- Pipes used to carry electric wiring. Conduit is most often made from galvanized steel or plastic.

CONTROL JOINTS- Joints placed in materials such as stucco, dryvit, concrete and masonry. They are intended to accept the movement of these materials caused by expansion and contraction. By doing so, they help prevent cracks from forming.

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CORNER TRIM- Trim pieces intended to give a finished look at a point where two wall planes meet. They may be prefabricated as in the case of vinyl and aluminum siding or may be made from molding or finish lumber for a particular spot.

CORROSION- The oxidation or rusting that occurs in metals as a chemical reaction to moisture in the atmosphere.

CORRUGATED- A surface of uniform hills and valleys running lengthwise. The most common corrugated sheets are made from aluminum, fiberglass and galvanized steel. Commonly used for roofing products on storage buildings and carports.

COUNTERSUNK- When a fastener such as a screw or bolt is recessed into the surface of the material it fastens, so that the head of the fastener is below or flush with the surface of the material.

COURSE- A row of brick or masonry units laid in a horizontal line. Each row is called a course.

CURING- A hardening process. Most often used in referring to concrete or epoxy type material.

-D-

DEADBOLT- A solid rectangular steel bar that secures a door to the frame. Generally, the most secure type of door lock.

DECIDUOUS- Trees that lose their leaves in the fall and remain bare throughout the winter. On the contrary, evergreen trees and shrubs retain their leaves and green color year-round,

DECK- The structural portion of a roof or floor that spans the distance between joists, rafters or trusses.

DELAMINATE- To come apart in layers. Usually the result of moisture damage.

DETERIORATE- To rot or fall apart.

DIFFUSER- The end of a run of HVAC ducting at the point where the air enters a room. Also called register or grill.

DIMPLE- The depression caused in drywall at which the hammer face drives the nail slightly below the surface.

DOUBLE GLAZING- Insulating glass in which two panes share the same frame. Usually, the air space between the panes is vacuum-sealed to improve insulating properties.

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DRUM SANDER- An electrically-operated sanding machine useful for sanding large areas such as a wood floor.

DRYWALL- Term referring to gypsum board construction which replaced lath and plaster. Used strictly for interior application.

DRYWALL NAIL- A steel nail with a concave head used to secure drywall to wood framing members.

DUCT- The rectangular or round pipe used for moving heated or cooled air in a HVAC system. Constructed from galvanized steel or rigid fiberglass boards.

DUCTWORK- The overall system of ducts in a HVAC system.

-E-

EAVE- The part of the roof that extends beyond the exterior walls.

EAVE'S DRIP (DRIP EDGE)- Specially-shaped metal trim that is installed along the eave to allow water to drip off of the roof without wetting the fascia.

EFFLORESCENCE- A chalky, white, powdery substance which is deposited on masonry surfaces, especially brick walls. It is caused by water dissolving calcium out of the mortar.

ELECTRIC HEAT TAPE- Commercially-manufactured flat electrical wire that uses a semi-resistant electrical conductor to give off heat. When wrapped around water pipes it prevents freezing.

ELEVATION- A term used to describe various exterior views of a dwelling. Also used to describe certain interior views of a dwelling (e.g. Cabinet Elevation).

EMT- Acronym for electric metallic tubing. EMT is a type of conduit.

EPOXY- A chemical compound used in paints and adhesives that form a superior finish to standard formulas. Usually a two-part mixture consisting of a base and catalyst or hardener.

ESCUTCHEON- Used as a cover at points where plumbing pipes come through a wall or cabinet to prevent rodent and air passage.

EVERGREEN- Trees and shrubs that retain their leaves and green color year-round.

EXPANSION JOINT- A joint between components of a building that

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compensates for and accepts movement caused by expansion and contraction of the building components.

EXPANSION SHIELD- A lead or plastic anchor placed in a predrilled hole; as a bolt or screw is inserted, it expands to grip the surfaces of the hole. They can be used in a variety of materials including drywall, concrete or masonry on walls, floors and ceilings.

EXPANSIVE SOIL- Soil with a high clay content that expands when it gets wet. It is very unstable for construction sites and normally must be excavated before construction can begin.

-F-

FACADE- The face of a building or dwelling. The entire exterior view of one side.

FACER BOARD- Slang term for fascia.

FASCIA- The outside edge of a roof or overhang. A fascia is normally vertical, but not always.

FASCIA BOARD- The board that forms the fascia.

FAUCET WASHER- The plastic or rubber disc that is fastened to the bottom of the faucet stem. The washer forms a seal when it contacts the seat, stopping the flow of water.

FELT- A fibrous material impregnated with asphalt. It comes in rolls of different thicknesses, expressed as a weight. It is often called builders' felt or tar paper. It is used on roofs, exterior walls, floors and under ceramic tile shower stalls.

FERRULE- A metal sleeve surrounding a gutter nail to prevent the gutter from collapsing as it fastened to the fascia. Also, a type of fitting used on soft copper tubing.

FIBERBOARD (DUCTBOARD)- Rigid fiberglass formed into sheets. One side has a shiny foil surface. It is mainly used for making ducts in HVAC systems.

FILAMENT- The thread-like wire that illuminates as it heats in an incandescent bulb.

FILLER-PRIMER- A primer that fills small voids to prepare a surface for painting.

FILTERED RETURNS- In an HVAC system, the filter is placed behind a grill rather than being located in the air handler unit.

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FINISH GRADE- The final surface elevation of a lawn, sidewalk, foundation, etc. The finish grade is important to provide proper site drainage.

FINISHING NAIL- A virtually headless nail used for trim and finish carpentry.

FINISHING TAPE- The paper tape used in finishing the joints when installing drywall.

FLASHING- Felt, plastic or metal used to prevent water from entering a dwelling over windows and doors, at vertical roof penetrations or at the intersections of adjoining roof lines.

FLEXIBLE SEALANT- A caulking or sealant that remains pliable and resists cracking when subjected to building movements.

FLOW RESTRICTOR- A device that reduces the quantity of water passing through a faucet without reducing the pressure.

FLUE- A pipe or shaft to allow the passage of smoke or exhaust gases to the outside. The internal part of a chimney.

FLUSH- In construction, this term refers to a completely smooth surface between two connecting planes.

FOOTER- Slang term for footing. Usually refers to a portion of a concrete foundation.

FORMICA- A trade name of one brand of plastic laminate. Formica is often used to refer to plastic laminate, but be aware there are many other brands available, usually at a better price.

FRAMING- A term common to the structural members of wood construction.

FRENCH DRAIN- A system of perforated drain pipes placed in a gravel bed adjacent to basement and foundation walls. French drains are used to prevent damage from high ground water and rain runoff.

FURRING- The process of leveling or evening out a wall, floor or ceiling by using furring strips. Usually to facilitate the installation of a new finish covering.

FURRING STRIPS- The strips of wood or metal used as furring material.

FUSE- A protective device that stops the flow of electricity in a circuit when it is overloaded. Fuses cannot be reused.

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FUSE BOX- The enclosure that contains the fuses. If breakers are used, it is called a breaker box.

-G-

GABLE- The triangular portion of a wall under the rake of a gable roof. Usually on the end or side of the building.

GABLE ROOF- A triangular, peaked style roof.

GASKET- A compressible material used to seal or close a gap between two opposing surfaces such as a door or window and its frame.

GLAZING SEAL- The rubber and metal seal between two panes of insulating glass that prevents the loss of the vacuum between the panes.

GRADE- The term used to describe ground level around a structure (rough grade or finish grade). Also used to describe the quality and uses of lumber used in construction.

GRAVEL DRIP BED- Placed under gutterless eaves to prevent serious soil erosion and standing water.

GRID- The metal suspended framework that supports ceiling panels in a lay-in or suspended acoustical ceiling.

GRILLE- A grating used to cover an opening in the ductwork of an HVAC system. See return air grill.

GROUND FAULT INDICATOR- A type of electrical outlet or circuit breaker that senses electrical current being incorrectly grounded and ceases the flow of current.

GROUT- A cement-like material used to seal the cracks between ceramic tiles or hold them to the surface to which they are applied.

GYPSON BOARD- A rock-like mineral that is sandwiched between two layers of paper and formed into sheets. It is used extensively on interior walls and ceilings. Commonly known as drywall.

-H-

HARD TILE- Fired clay tile such as ceramic or quarry.

HARDWARE CLOTH- Woven, galvanized wire screening usually used over attic and crawl space foundation vent openings.

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HEADER- A beam spanning a rough opening in frame construction such as a door or window.

HIGH WATER TABLE- A condition in which ground water is found very near the surface. This can create many problems in housing maintenance.

HINGE- The metal connection providing movement, as in between a door and jamb.

HIP ROOF- A type of roof shape in which all edges are horizontal and the roof slopes inward and upward on all sides.

HONEYCOMB- Voids left in concrete from inadequate vibration during pouring. This condition causes the concrete to be subject to failure.

HOSE BIBB- An outside faucet with special threads designed to receive a garden hose.

HOT-DIPPED GALVANIZED- A process in which zinc is applied to iron or steel to prevent rusting. All exterior nails should be stainless steel or hot-dipped galvanized.

HURRICANE CLIP- A galvanized steel bracket applied in frame construction when local building codes or specifications require its use.

HVAC- An acronym for heating, ventilation and air conditioning.

- | -

IMPERVIOUS- Incapable of being penetrated or passed through. An impervious surface is often required in paving, and is always used in foundation walls and built-up roofing.

INCANDESCENT LIGHT- A form of light transmitted from a heated filament. The least energy efficient light source but the most common in residential lighting.

INSTALLATION- The act of placing a material or object in its final place during construction.

IONIZATION- The change in the molecular structure of a substance. Smoke detectors use ionization to detect the change in air caused by fire.

-J-

JALOUSIE- A type of window that contains numerous strips of glass

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that open outward similar to an awning window. This type of window was very popular in the south; it is a maintenance nightmare.

JAMB- The weight-supporting side of a door or window.

JOINT COMPOUND- A prepared paste-like mixture of gypsum and water used to finish drywall installation. When used in conjunction with finishing tape, it covers seams and nail dimples to provide a smooth finish.

JOIST- Horizontal structural member in frame construction that supports floors and ceilings. Mistakenly, roofing components are sometimes called roof joists; they are in fact rafters.

-K-

KEEPER- The part of a door lock that fastens to the jamb. Often called a strike plate.

KILN DRIED- Lumber which has been dried in environmentally controlled rooms to achieve ideal moisture content in the wood to prevent splitting and warping.

KNURLED- Having a series of uniform ridges around an object to make it easier to grip. Maintenance workers are most familiar with knurled adjustment screws or bolts.

-L-

LAG BOLT- A bolt, looking more like a screw, with a square or hexagonal head used in working with large dimension lumber.

LAMINATE- Describes the process of joining thinner layers of a material together with glue, cement or adhesive to form a solid, thicker material. Also, a term to describe the plastic material used on countertops, often mistakenly referred to as formica.

LAMINATED- Construction materials formed of thinner layers fastened together by glue, cement or adhesive, as in plywood or laminated beams.

LATCH- The tongue-like projection extending out of the door lock through the door and into the keeper in the jamb.

LATCH BOLT- A latch that can be locked. It cannot be pushed back without first being unlocked.

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LATH- A metal mesh used in plastering, stucco and ceramic tile work. The lath is fastened to the wall and the cement-like material is forced into the mesh.

LAY-IN CEILING- A common name that refers to a suspended acoustical ceiling. The ceiling panels lay in the suspended grid.

LEACH- To filter or soak into or through. Desirable as in septic drain fields, undesirable as in foundation walls.

LINTEL- Another name for a header. Used more frequently in block or CMU construction of walls.

LITE- A fixed glass in a door or window.

LOAD BEARING- A component of a building that supports the weight of something other than itself. A wall that supports the roof is a load bearing wall.

LOUVERS- A ventilating opening containing downward-turned slats to exclude rain, light or vision.

-M-

MANSARD ROOF- A type of roof with two slopes on each of the four sides. The lower slope is much steeper, sometimes almost vertical, than the upper slope.

MASON- A tradesman skilled in the art of laying brick or other concrete masonry units.

MASONRY- A type of construction involving the use of brick or other concrete masonry units.

MASTIC- A thick paste-like construction adhesive. Most common in laying of vinyl floor coverings.

MEMBER- A piece of a building assembly or system.

MEMBRANE- A sheet-like impervious barrier to water, may be rubber or plastic.

METAL FRAMING ANCHOR- One of many types of galvanized steel brackets used in framing construction. Hurricane clips and joist hangers are two examples.

METAL STUD- A framing stud formed from galvanized metal. More common in commercial construction than residential.

METHANE GAS- Sewer gas produced by the decomposition of organic waste. Proper trapping in a plumbing drainage system

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prevents it from entering a dwelling.

MINERAL FIBER- Used in the manufacturing of some ceiling panels and tiles.

MINERAL SPIRITS- A common paint thinner and solvent used in thinning and the clean up of oil-based paint.

MODULAR- A type of construction in which building components are preassembled and trucked to the construction site for final assembly.

MOLDING- Finish trim used to conceal a joint or decorate a surface.

MORTAR- A mixture of sand, lime, cement and water used in masonry and some hard tile work.

MUD- A slang term for joint compound.

MULCH- Organic material used in landscaping. Leaves, straw and tree bark are types of mulch.

-N-

NEOPRENE- A synthetic rubber that is highly resistant to heat, oil, sunlight and dry rot.

NIPPLE- A short length of plumbing pipe threaded on both ends, usually twelve inches or less.

NOSING- The leading edge of a step. It is the portion of the tread that extends beyond the riser.

NOTCHED TROWEL- A specialty trowel the edge of which will either have square or **vee** teeth. Used for spreading various construction adhesives.

-O-

ONE BY FOUR (1X4)- A standard construction board that actually measures $\frac{3}{4}$ "X $3\frac{1}{2}$ " .

OPERABLE SASH- The portion of a window that opens.

ORIENTED STRAND BOARD- Processed wood sheathing commonly called wafer board. It is mainly used for roof decking.

OXIDIZE- To unite with oxygen. Visible on steel as rust, forms a white, chalky powder on aluminum.

-P-

PANE- A sheet of glass in a window frame. A single window can have several panes.

PANELBOARD- The electrical control center of a dwelling. The cabinet that contains the breakers or fuses.

PARAPET- The portion of the exterior wall that extends above the surface of the roof. Most common on flat roofs.

PARTICLE BOARD- A processed wood sheet product made from small wood particles, similar to sawdust, and resin bonded under heat and pressure. Used for countertops, cabinet making and floor underlayment. It is a very low durability product and its use is highly discouraged.

PENNY- A designation for the size of nails. The lower the number, the smaller the nail. A 16d is a common framing nail, while a 4d finish nail would be used for trim work.

PERCOLATE- To soak or filter through. Mainly used in reference to a septic system drain field.

PHOTOELECTRIC CELL- An electrical device mainly used to control lighting. In the absence of light, it causes lights to turn on, and when other light is present, it turns lights off.

PITTED- Small irregular surface voids. Used mainly to describe conditions in concrete.

PLANE- A tool used in wood working to level a surface. The act of using the tool, as in "to plane the door".

PLASTER- A pasty cement-like mixture used for covering walls and ceilings in conjunction with lath. Commonly called stucco when used on the exterior.

PLASTIC ANCHOR- A type of expansion shield similar to a lead shield but designed for much lighter loads.

PLASTIC LAMINATE- Thin sheet of plastic with an impregnated finish used to cover countertops and cabinets.

PLATE- Horizontal wood framing members that support or tie together other members. The most common are the sill plate and top plate.

PLENUM- The trunk area of the duct work where various ducts branch off.

PLUMB- Construction term for perfectly vertical.

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PLUMBER'S SNAKE- A flexible metallic cable used for clearing drains.

PLYWOOD- A wood building material formed by laminating alternating grains of thin wood veneer.

PNEUMATIC CLOSER- A common closing device for screen or storm doors. Air passing between two chambers controls the rate of speed at which the door closes.

POLYSTYRENE- A clear colorless plastic used in construction. The material comes in various thicknesses and sheet dimensions. It is used as a wind and vapor barrier on walls and as a vapor barrier under slab on grade construction.

POLYURETHANE- A form of synthetic rubber used in sealers, insulation and molded construction products.

POP RIVET- A metal fastener that is useful for sheet metal repair when access can only be gained from one side.

POROUS- A material that is full of tiny holes that allow liquids to penetrate or pass through.

PRESSURE TREATED WOOD- Wood that has been impregnated with a preservative under extremely high pressure. After treatment, this wood retains a greenish color and is highly resistant to rot and insect infestation.

PRIMED- Describing a surface after primer has been applied. Some building components are sold primed.

PRIMER- A type of paint that is applied to a bare surface to prepare it to receive paint.

P-TRAP- A downward bend in the drain system that is designed to hold water. This water trap prevents the entrance of sewer gas into the dwelling.

-Q-

QUARRY TILE- A hard-fired type of tile that is very durable and will not soak up water. It is used as interior and exterior finish flooring.

QUARTER ROUND- A type of molding that is shaped like one-quarter of a circle. It is sold in various sizes and is used for trim work.

-R-

RAFTER- A sloping structural member that supports a roof or roof section.

RAFTER TAIL- The part of a rafter that extends outward beyond the exterior wall. Often called a lookout or roof projection.

RAIN DIVERTER- See eave's drip or drip edge.

RAKE- The sloping edge of a roof.

REBAR- Slang for reinforcing steel bar. Used in concrete and block foundations and walls.

RECESSED ENTRY- A design in which the entrance door is placed in an alcove.

REGISTER- A fixture on the surface of a wall or ceiling through which HVAC air flows from the ductwork to the room. Sometimes called a grille.

RELATIVE USEFUL LIFE- The approximate length of time a material or product can be expected to be serviceable before it requires replacement. Also called average life span or life cycle.

RESILIENT- To bounce or spring back into shape. Often used to describe certain vinyl floor coverings.

RESILIENT FLOORING- Any one of a number of floor coverings having a resilient quality.

RETAINING WALL- A wall, masonry or wooden that holds back the side of a hill or embankment.

RETROFIT- To go back and replace with new.

RETURN AIR- In HVAC systems, it is the air drawn from the dwelling, filtered, reconditioned and returned to the dwelling.

RETURN AIR GRILLE- A type of register that covers the opening of the return air duct.

RING SHANK- A type of nail with circular ridges located on the shaft. This type of nail has a superior holding power than common nails and is preferred for use on areas such as decks.

RISER- The vertical surface between two treads on a stairway.

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ROOF FLASHING- Any flashing located on the roof. See flashing.

ROOF SHEATHING- The boards or sheets nailed over the roof rafters. Also called roof decking.

ROOFING CEMENT- A black asphalt based mastic used on the installation of flashings and for repairing roof leaks.

ROOFING FELT- See felt.

ROOF MEMBRANE- The portion of a roof that forms the impervious barrier to water. In a built-up roof, it may consist of several layers of felt held together by asphalt while on some types of roofs it may be a single thin layer of rubber.

ROOFING NAIL- A type of nail with an unusually large, flat head.

ROUGH GRADE- The ground elevation surrounding a building before any landscaping work is done.

-S-

SASH- The frame immediately around the glass in a window frame. The window frame holds the sash and the sash holds the glass.

SCREED- A board or other straight edge used to level freshly poured concrete.

SCREENING TOOL- A tool used to install the vinyl retainer in a screen frame. It resembles a pizza cutter but the wheel is wider and will not cut.

SCREEN MOLD- A small wood trim about $\frac{3}{8}$ " wide by $\frac{1}{4}$ " thick that cover the edges of screen when it is installed in a wood frame.

SEASONAL DISPLAY- A landscaping term used to describe the changes in a landscaping plan from season to season.

SELF-SEALING SHINGLES- In asphalt and fiberglass shingles, these shingles are manufactured to stick solidly together after being heated by the sun.

SET- To drive a nail below the surface of the material in which it is driven.

SETTING BED- A thick layer of grout or mortar used to level a rough floor before floor tile is installed. Setting beds are usually one to two inches thick.

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SETTLEMENT- A term used to describe an unequal sinking or lowering of a part of the structure. It may be caused by foundation failure or movement of the earth. Settlement is often evidenced by cracks in the walls.

SHEATHING- Any material, but usually plywood or fiberboard, used to cover the outside of the wood framing of a building. Sheathing is used on walls and roofs.

SHEET GOODS- Common name for rolled floor coverings such as linoleum.

SHEETROCK- One company's tradename for gypsum board.

SHEET VINYL- A type of resilient plastic based flooring that is manufactured in sheets six or twelve feet wide.

SHINGLE TABS- A standard asphalt or fiberglass shingle has three tabs that are partially divided by the notches that are visible when the shingles are installed.

SIDELIGHT- A fixed glass panel installed on one or both sides of a door.

SILICONE SEALANT- A superior, durable, pliable and adherent sealant used for various applications.

SILL- The bottom member within an opening. A door threshold is often called a sill as is the bottom of a window.

SILL PLATE- The flat board on which wall studs rest. Also, the board on the foundation on which floor joists rest.

SINGLE PHASE- A type of simple alternating electrical current. Single phase is the most common residential current.

SINGLE PLY MEMBRANE- A type of roofing that utilizes a single layer of material to achieve a watertight seal.

SLEEVE- A tube passing through a solid material through which other tubing or wiring pass.

SLURRY- A thin, very liquid mixture of a substance. Slurry is most commonly associated with concrete and asphalt work.

SNOW STOPS- Installed on sloped roofs to prevent snow and ice from sliding off.

SOD- Rectangular slabs of grass used to establish lawns as part of a landscaping program.

SOFFIT- The underside of a roof overhang. Also, a portion of a

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lowered ceiling, usually above cabinets, often called a fir down.

SOLVENT- A material capable of dissolving another.

SPACKLING COMPOUND- A pasty, white gypsum based material used to patch small areas of damage in walls and ceilings.

SPALLING- The cracking or flaking that occurs in concrete and masonry installations.

SPLASH- Slang term for backsplash.

SPLASH BLOCK- A molded slab of concrete or plastic placed under downspouts in guttering systems to disperse water and reduce erosion.

SPLASH RECEPTOR- A contained area of gravel, rock or stones to catch water falling from a roof. Filling the area with stony materials prevents erosion and the splashing of dirt and mud onto the exterior of the building.

SSMR- Acronym for Shore Station Maintenance Record. The SSMR is used to report or request; any alteration or improvement to a facility, any repair or replacement project that is non recurring and cost more than \$2,000.00 and any need for engineering assistance from the CEU.

STOP- The part of a door frame that prevents the door from swinging through. Also, a hardware item installed behind doors to prevent the knobs from damaging adjacent walls.

STRIKE PLATE- See keeper.

STRIP HEATING- Also called heat strips. Electric resistance heating used in some HVAC systems. They are also used as booster heat on heat pump type HVAC systems.

STRIPPED- The condition of screws when they no longer grip or tighten into a material when they are turned.

STUCCO- Exterior plaster applied over lath.

STUD- Vertical framing members of a structure.

SUBFLOOR- The sheets or boards that are applied and fastened directly to the floor joist. When all construction is completed the finish floor is installed.

SUBFLOORING- Any material used as a subfloor.

SUBSTRATE- Refers to the layer or structure immediately below another. The primer is the substrate of the paint, the

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subfloor is the substrate of the finish floor.

SUBTERRANEAN- Underground, lying or living beneath the earth's surface. Subterranean termites.

SUMP- A pit or depression in which water is allowed to accumulate. Often found in basements.

SUMP PUMP- The pump used to remove water from a sump.

SUSPENDED ACOUSTICAL CEILING- Sometimes called a lay-in ceiling. A series of ceiling panels placed in a grid system supported by wires.

SYSTEM- A series of components joined together to perform a function in a dwelling. Examples would be the plumbing or HVAC systems.

-T-

TAPED JOINT- A joint between two sheets of drywall containing finishing tape and joint compound.

TAR PAPER- See felt.

TEGULAR- A type of suspended ceiling panel in which the face hangs below the metal grid.

TEMPERED GLASS- A type of glass that is heated-treated to resist breakage. If it does break, it shatters into many small relatively harmless pieces rather than dangerous large pieces.

THERMAL- Thermal building materials are those which have some superior ability to either repel or retain heat.

THERMOPANE- One company's trade name for insulating glass.

THREE PHASE- A more complex but more energy-efficient type of electrical current. Used rarely in residential service but regularly in commercial service.

THRESHOLD- The piece of material directly under a door that seals out rain and wind.

THUMB TURN- A small knob that is standard for engaging and retracting a deadbolt lock.

TIN TAB- Sometimes called a bottle cap. A thin piece of metal about 1½" in diameter used in conjunction with the roofing nails when installing felt.

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- TOGGLE BOLT-** A bolt with a spring-loaded, wing-like nut. The wings collapse as the nut is pushed through the hole then the springs expand the wings allowing them to grip the interior surface of the wall. This type of bolt is very useful for anchoring objects to drywall ceilings or walls.
- TONGUE AND GROOVE-** A type of joint found in many construction lumbers, especially wood flooring and siding. The joint is formed by a protrusion on one edge fitting snugly into a recess or cavity in the adjoining edge.
- TOP PLATE-** The horizontal framing member placed on and nailed to the top of the studs. In most construction there is a double top plate. The bottom edge of the rafters also rest and are nailed to the top plate.
- TRAP-** An intentional dip in a plumbing drain line beneath a plumbing fixture. A "P" type trap is the most common and can be seen under a sink or lavatory. There are other types that perform the same task, i.e., to retain a water seal that prevents sewer or methane gas from entering a dwelling.
- TREAD-** The horizontal portion of a stairway. Where a foot treads when climbing the stairs.
- TRIPLE GLAZING-** In which three panes of glass are used in insulating windows. Two is most common.
- TRIPPED BREAKER-** When a circuit breaker has switched the current off.
- TROWEL-** A flat steel tool of various shapes used to spread and smooth plaster, mortar, stucco, concrete and similar materials.
- TRUSS-** A structural member gaining its strength from a series of triangular patterns. Made from wood or steel and used mainly for supporting roofs in the place of rafters.
- TUCK POINT-** A method of repairing mortar joints by tucking new mortar in the damaged joint.
- TURF-** The grass in a lawn.
- TWO BY EIGHT-** A standard framing board, usually expressed as 2X8. Actual dimensions are 1½"X7¼".
- TWO BY FOUR-** A standard framing board, usually expressed as 2X4. Actual dimensions are 1½"X3½".
- TWO BY SIX-** A standard framing board, usually expressed as 2X6. Actual dimensions are 1½"X5½".

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TWO BY TEN- A standard framing board, usually expressed as 2X10. Actual dimensions are 1½"X9¼".

TWO BY TWELVE- A standard framing board, usually expressed as 2X12. Actual dimensions are 1½"X11¼".

-U-

UNDERLAYMENT- Material placed over the subfloor to which the finish floor is applied. Underlayment provides a much smoother finish than the subfloor.

-V-

VCT- Acronym for vinyl composition tile.

VENEER- Usually refers to a thin layer applied to disguise the material underneath. Wood and plastic veneers are used to give a solid wood look to composition materials. A brick finish is said to be brick veneer when it has no structural significance.

VENT- A part of the plumbing drainage system that is usually visible on the roof. Technically, any part of the drainage system that allows outside air to enter the drainage pipe. This prevents siphonage that would pull the water seal out of a trap and allow sewer gas to enter the dwelling.

VINYL- Any one of several types of plastics used in construction. Most commonly used in reference to flooring and siding.

VINYL COMPOSITION TILE- A type of resilient flooring that is marketed in squares in a variety of thicknesses and colors.

VINYL TILE- Identical to sheet vinyl (linoleum) except it is marketed in squares rather than sheet goods.

-W-

WAFER BOARD- A common name for oriented strand board. It is made from large chips of wood formed into sheets by heat, pressure and a resin bonding agent. It has structural capabilities and can be used for wall and roof sheathing.

WASHER- A flat disc with a hole in the center. Rubber or plastic washers are used for plumbing. Steel washers are used for various purposes in construction and maintenance.

WATER TABLE- The level or depth at which the underground soil is

MAINTENANCE ASSESSMENT GUIDE FOR COAST GUARD HOUSING

saturated with water. Often in coastal areas this is a major concern for construction and maintenance workers.

WEATHERSTRIP- The thin piece of metal, rubber, foam or plastic used to obtain a seal around doors and windows when they are in the closed position. .

WOOD LATH- An old-fashioned component of plaster work that can still be found in older military housing. A series of thin wood slats were nailed across the studs with approximately 1/4" gaps between them. The plaster was then squeezed through the gaps to obtain the first coat.

WOOD SCREW- Used in construction to fasten objects to wood or hold wood components together.

WOOD STUD- Very simply, a stud made of wood. The most common in residential construction are 2X4's and 2X6's.

WRINKLED TIN- A slang term for corrugated galvanized steel. Used most often for agricultural and storage buildings.

WROUGHT IRON- Used for ornamental purposes such as fences and furniture.

-X Y Z-

YARD HYDRANT- A hose bibb located remotely from the dwelling. A sufficient number should be installed to reach any point in the lawn with a fifty foot garden hose.

DEPARTMENT OF TRANSPORTATION U.S. COAST GUARD CG-4094 (Rev. 5-67)		SHORE STATION MAINTENANCE RECORD		REPORT NUMBER	
DISTRICT		UNIT			
PRIORITY		PREVIOUSLY SUBMITTED BY <i>(Identify, i.e., letter, message, inspection report, etc.)</i>			
DESCRIPTION OF WORK: <i>(Attach additional sheets if required)</i>					
MATERIAL STATUS: <input type="checkbox"/> ORDERED, DELIVERY BY <input type="checkbox"/> ON BOARD <input type="checkbox"/> TO BE ORDERED BY		RECOMMENDED ACCOMPLISHMENT BY <input type="checkbox"/> UNIT GROUP <input type="checkbox"/> BASE <input type="checkbox"/> CONTRACT <input type="checkbox"/> WORK ORDER			
DATE	SIGNATURE <i>(Unit Commander)</i>	ENCLOSURE			
GROUP COMMENTS:					
GROUP		<input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED <input type="checkbox"/> RECOMMENDED APPROVAL	DATE	SIGNATURE <i>(Group level)</i>	
BASE COMMENTS:					
<input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED <input type="checkbox"/> RECOMMENDED APPROVAL		<input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED			
DATE	SIGNATURE <i>(Base level)</i>	DATE	SIGNATURE <i>(District level)</i>		
DATE COMPLETED	COMPLETED BY: UNIT	c GROUP		c BASE	<input type="checkbox"/> CONTRACT
WORK ORDER NO.					

DEPARTMENT OF TRANSPORTATION U. S. COAST GUARD CG-4094 (Rev. 5-67)		SHORE STATION MAINTENANCE RECORD (May be filled in with ball point pen or pencil)		REPORT NUMBER FY-01, 02 etc
DISTRICT 09		UNIT . Station Two Rivers POC MK1 John Doe (phone no.)		
PRIORITY None		PREVIOUSLY SUBMITTED BY (Identify, i.e., letter, message, inspection report, etc.)		
DESCRIPTION OF WORK: (Attach additional sheets if required)				
<p>Replace station Roof ← KEY WORD SAVES TIME</p> <p>Station roof is approx 20 years old. Roof leaks in one spot at the NE corner over the front porch. Mineral surface of shingles is worn off in several areas and the corners of shingles are curling under.</p> <p>↑ BRIEF DESCRIPTION</p>				
MATERIAL STATUS		RECOMMEND ACCOMPLISHMENT BY		
<input type="checkbox"/> ORDERED, DELIVERY BY <input type="checkbox"/> ON BOARD <input type="checkbox"/> TO BE ORDERED BY		<input type="checkbox"/> UNIT <input type="checkbox"/> GROUP <input type="checkbox"/> BASE <input checked="" type="checkbox"/> CONTRACT <input type="checkbox"/> WORK ORDER		
DATE 23 Dec 92	SIGNATURE (Unit Commander)	ENCLOSURE Photos and Video Tape ← IF POSSIBLE		
GROUP COMMENTS:				
<p>Group personnel have patched leak with roofing cement. Group records show roof to be 22 years old. Recommend roof be replaced.</p> <p>↑ LOCAL INFORMATION/RECOMMENDATIONS/ENDORSEMENTS</p>				
GROUP Milwaukee	<input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED <input checked="" type="checkbox"/> RECOMMEND APPROVAL	DATE 28 Dec 92	SIGNATURE (Group level)	
BASE COMMENTS:				
<p>This work is beyond Base capabilities, concur with Group comments.</p> <p>↑ BASE RECOMMENDATIONS IF APPLICABLE. EX. BASE CAN ACCOMPLISH WITH WORK ORDER FUNDING.</p> <p>WHEN COMPLETE FILL IN BLOCK AND RETURN TO CEU.</p>				
<input type="checkbox"/> APPROVED <input checked="" type="checkbox"/> DISAPPROVED <input checked="" type="checkbox"/> RECOMMEND APPROVAL		<input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED		
DATE 3 Jan 93	SIGNATURE (Base level)	DATE 5 Jan 93	SIGNATURE (District level)	
DATE COMPLETED	COMPLETED BY: <input type="checkbox"/> UNIT <input type="checkbox"/> GROUP	<input type="checkbox"/> BASE <input type="checkbox"/> CONTRACT <input type="checkbox"/> WORK ORDER NO.		

**CIVIL ENGINEERING UNITS
ADDRESSES AND TELEPHONE NUMBERS**

CEU Providence

300 Metro Center Blvd.
Warick, RI 02886-1747
(401) 736-1700

CEU New York

Building 107, Govenors Island
New York, NY 10004-5039
(212) 668-7076

CEU Miami

Brickell Plaza Federal Bldg.
909 S.E. First Ave.
Miami, FL 33131-3050
(305) 536-5661

CEU Cleveland

1240 East Ninth Street
Cleveland, OH 44199-2060
(216) 522-3934

CEU Oakland

2000 Embarcadero, Suite 200
Oakland, CA 94606-5337
(510) 535-7200

CEU Honolulu

Prince Kalaniana'ole Federal Bldg.
300 Ala Moana Blvd. Suite 8122
Honolulu, HI 96850-4982
(808) 541-2195

CEU Juneau

P.O. Box 21747
Juneau, AK 99802-1747
(907) 463-2400

ASSESSMENT RESULTS FOR UNIT # _____

This list of assessment findings should be locally reproduced and used to note problem areas discovered during the maintenance assessment. It is to be placed in the Maintenance History File. This list can be referred to when completing the SSMR's.

FOUNDATION:

1. List foundation type: _____
2. Describe any cracks, settling, or erosion around the perimeter of the foundation. _____

3. Describe problems associated with standing water under or next to the foundation. _____

4. Is a vapor barrier present under all crawl space foundations? _____
5. Describe moisture and structural problems discovered in basement walls. _____

6. Describe termite activity discovered. _____

7. Describe any cracks, or visual damage to interior walls that may be related to foundation problems. This will also include problems with doors and windows out of plumb. _____

8. Foundation notes. _____

EXTERIOR WALL STRUCTURE:

1. List wall type. _____
2. List any visible problems with concrete or block walls. _____

3. List all moisture related problems. _____

4. Describe any evidence of termite damage. _____

5. Exterior wall structure notes. _____

EXTERIOR WALL FINISH:

1. List finish type. _____
2. List problems with block or concrete exterior finish. _____

3. List problems with brick veneer finishes and mortar joints. _____

4. List damage to wood based siding products. All moisture related problems including rot, **warp**, splitting and paint condition should be noted. _____

5. List all problems evident on stucco and **dryvit** finishes. _____

6. List all problems discovered in vinyl, aluminum or metal siding finishes. _____

7. Exterior wall finish notes. _____

ROOF STRUCTURE:

1. List the type of roof. _____

2. Describe any visible droops or sags in the roof line. _____

3. List any rot or moisture damage visible from the attic access. _____

4. Roof structure notes. _____

ROOF COVERINGS:

1. List roof covering type. _____

2. Describe the condition of the flat roof covering. _____

3. Note the condition of composition roof coverings and their age. _____

4. List any signs of leaks visible in the attic or on interior ceilings. _____

5. List any apparent wind, hail or other storm damage. _____

6. Roof covering notes. _____

ROOF TRIM:

1. Describe the condition of the paint or other finish on the roof trim. _____

2. List all areas and the extent of wood rot discovered on the fascia and soffit. _____

3. Are the soffit and gable vents providing adequate attic ventilation? _____ Are they free from holes and tears that would allow rodents to enter? _____
4. Roof trim notes. _____

ROOF FLASHINGS:

1. List flashing materials used. _____
2. Describe any apparent leak damage due to flashing failure. _____

3. Describe the visual condition of the flashing materials. _____

4. Describe the condition of the sealant and adhesive material between the flashings and adjoining surfaces. _____

5. Roof flashing notes. _____

GUTTERING AND DOWNSPOUTS:

1. List drainage defects and visual damage on guttering and downspouts. _____

2. Describe causes for drainage problems within the guttering system. _____

3. List and describe erosion problems visible around the downspouts and foundation. _____

4. Guttering and downspout notes. _____

WINDOWS:

1. List all discrepancies involving broken, cracked or loose window panes. _____

2. Where thermal pane windows are present, list all problems with condensation forming in the air space between the panes. _____

3. List problems discovered with the operation of window sashes, screens, locks and latches. _____

4. Describe rot or deterioration found on wood frame windows. _____

5. List all windows above the first floor that do not meet the minimum fire egress requirements. _____

6. Window notes. _____

EXTERIOR DOORS:

1. Describe cosmetic defects on exterior doors. Include peeling paint and surface rust. _____

2. Describe functional defects on exterior doors. Include splitting and **warpage** on wood doors and rust on metal doors. _____

3. List problems involving gaps and missing weather-stripping between doors and jambs. _____

4. Exterior door notes. _____

GRADING AND SITE DRAINAGE:

1. Describe areas in which inadequate drainage is causing puddling or standing water problems in the lawn or adjacent to and under the dwelling foundation. _____

2. Describe areas in which excessive slope is causing erosion problems in the lawn or next to the dwelling foundation. _____

3. Grading and site drainage notes. _____

LANDSCAPING:

1. Describe the extent to which a community landscaping program is being used, _____

2. Describe the shortfalls or the absence of the landscaping plan. _____

3. List areas where a landscaping effort would reduce or prevent erosion, standing water or bare spots in the lawn areas surrounding a dwelling. _____

4. Landscaping notes. _____

PARKING PADS:

1. List the number of parking pads or spaces, including carports and garages, required to provide a minimum of two spaces per unit, _____. If this number is greater than the existing number of spaces provided, additional pads or spaces should be installed.

2. Describe the physical condition of the existing parking pads. ____

3. Parking pad notes. _____

SUBFLOORING:

- 1. List and describe any presumed defects found in the subfloor evidenced by soft spots or bulges in the floor surface. _____

- 2. List any areas of rot discovered in the subfloor. This is especially prevalent around plumbing fixtures. _____

- 3. Describe areas of termite or insect damage discovered in the subfloor. _____

- 4. Subfloor notes. _____

FLOOR COVERINGS:

- 1. Describe the condition of all carpets located in the unit. _____

- 2. Describe defects found in areas covered with vinyl composition tiles. _____

- 3. Describe the condition of wood flooring materials used in the dwelling. _____

- 4. Note problems discovered with the linoleum (sheet vinyl) flooring products found in the unit. _____

5. Note any defects found in ceramic tiled areas.

6. Floor covering notes.

WALLS AND WALL COVERINGS:

1. List all physical damage found on interior walls. This would include holes, gouges, cracks and deterioration around windows.

2. Note areas in which excessive paint build up is causing peeling, cracking and flaking to occur on the painted surfaces.

3. List areas in which cracking or separation of walls from the ceiling might indicate foundation failure.

4. Describe areas in which the removal or erection of walls might enhance the layout of an existing floorplan.

5. Walls and wall covering notes.

CEILINGS:

1. List all areas of physical damage to ceilings. This would include holes, gouges and signs of water damage. _____

2. List areas which have flaking and peeling paint. Note areas in which excessive paint build up is contributing to the problem. _____

3. Describe problems found with ceiling tiles (suspended or direct applied). _____

4. Describe areas in which ceiling damage could be the result of roof or foundation failure. _____

5. Ceiling notes. _____

BATHROOMS:

1. Using current construction standards, determine if the existing bathroom fixtures and layout are compatible with modern facilities or instead outdated and in need of upgrade. ____

2. Comment on the condition of walls, floors and ceilings and the defects noted earlier in the assessment. _____

3. Are GFI outlets in place and in working order? _____
4. Discuss other problems discovered involving the condition of

APPLIANCES:

1. List those appliances that should be scheduled for replacement because of their age. _____

2. List unsightly dents, scratches, surface rust or other defects including color affecting the cosmetic appeal of the existing appliances. _____

3. Appliance notes. _____

ELECTRICAL SERVICE:

1. List recurring problems involving tripped breakers, blown fuses, or excessive fluctuation in light levels as electrical loads change. _____

2. List the number of electrical outlets that are defective, worn or not of the proper type. _____

3. List other defects discovered in the electrical system when comparing against the criteria listed in the guide. _____

4. Electrical service notes. _____

HEATING AND AIR CONDITIONING SYSTEMS:

1. List the results and deficiencies discovered in the inspection steps listed in the guide. _____

2. Describe the steps necessary to correct the problems identified.
3. Heating and air conditioning system notes.

PLUMBING SYSTEM:

1. List the results of the water test for lead content.
2. List the results and deficiencies discovered in the plumbing system as it is checked against the criteria listed in the guide.
3. List all steps required to correct the problems identified during the assessment.
4. Plumbing system notes.

OVERALL ASSESSMENT NOTES: _____

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

countertops, faucets, ventilation, and fixtures. _____

5. Bathroom notes. _____

KITCHEN:

1. Describe the condition of walls, floor and ceiling as noted earlier in the assessment. _____

2. Describe the efficiency and attractiveness of the current kitchen floorplan. Determine if the current layout is within the confines of the work triangle. _____

3. Describe problems discovered with the cabinets and countertops. _____

4. Describe defects found with the plumbing or electrical systems, ensure the kitchen is well illuminated. _____

5. Kitchen notes. _____

